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As a means of communication between

EUROPE & THE COMMERCIAL CENTRE OF THE GREAT WEST.

Shewing also the Extension of the

NORTHERN PACIFIC RAILWAY ROUTE THROUGH CANADA,

to the

Nearest Atlantic Seaport

at

MONTREAL.

Prepared for the Canadian Commissioners of the Paris Exhibition

by

Thos C. Keefer, C.E.

Montreal.

1855.

G. Matthews Lith. Montreal

JOHNSONS PROFILE

OF THE

NORTHERN ROUTE FOR THE PACIFIC RAILROAD

FROM

Lake Michigan to Vancouvers Island.

Shewing relative Summits on other Routes.

PRIZE ESSAY.

CANADA AND HER RESOURCES:

AN ESSAY,

TO WHICH, UPON A REFERENCE FROM THE PARIS EXHIBITION COMMITTEE OF CANADA, WAS AWARDED, BY

HIS EXCELLENCY SIR EDMUND WALKER HEAD, BART.,

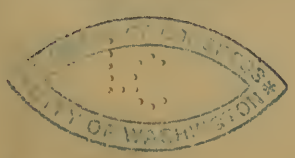
GOVERNOR GENERAL OF BRITISH NORTH AMERICA,
ETC., ETC., ETC.,

THE SECOND PRIZE.

BY ALEXANDER MORRIS, A. M.,
BARRISTER-AT-LAW.

SECOND EDITION.

"VIRTUTE ET LABORE,"
"DUM SPIRO, SPERO,"



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PREFACE.

THE writer, in submitting this Essay to the attention of his readers, disclaims all pretension to originality. His labour has been the plodding one of a compiler, and thus he has availed himself liberally of the resources within his reach. Keeping in view the desiderata of "practical utility and comprehensiveness, combined with conciseness," his sole object has been to produce a Treatise characterised by these features, and thereby to contribute his mite to the advancement of his native country. He therefore dedicates this Essay to THE PEOPLE OF CANADA, in the hope that the ensuing pages may be found to contain reliable information with regard to the resources and present position of the Province, and prove of permanent utility "for purposes of reference."

Montreal, May, 1855.

"It is scarcely possible that an Englishman of sensibility and imagination should look without pleasure and national pride on the vigorous and splendid youth of" (a colony which is destined yet to be) "a great people, whose veins are filled with our blood, whose minds are nourished with our literature, and on whom is entailed the rich inheritance of our civilization, our freedom, and our glory."—*Macaulay.*

INDEX.

PAGE.

Introduction.—Plan of this Treatise,..... 7

Geological Structure—Chapter I,..... 8
Preliminary Outline,..... 8
Western Geological Division of Canada,..... 9
Eastern do. do. do. 19
Northern do. do. do. 20

Geographical Features—Chapter II,..... 22
Boundaries of whole Province,..... 22
The Magdalen Islands—Anticosti,..... 23
Natural Divisions of Lower Canada—the Ottawa Country—the Eastern Townships, &c., &c.,..... 23
Natural Divisions of Upper Canada,..... 34
River St. Lawrence,..... 38
The Lakes..... 38

Natural Products—Chapter III,..... 40
The Forest,..... 40
Mines and Minerals,..... 42
The Fisheries,..... 46
Agricultural Produce,..... 47
Growth of Flax and Hemp,..... 48

Manufactures—Chapter IV,..... 49

Commerce—Chapter V,..... 51
General Commerce,..... 52
Trade with United States—its progress,..... 55
The Reciprocity Treaty, and its features,..... 55
Intercolonial Trade—its position—suggestions as to its extension,... 57
The Canadian Passenger Route,..... 58
Ocean Steamers,..... 60
Canals of Canada,..... 61
The Railway System,..... 63
The Grand Trunk Railway,..... 64
The Great Western Railway,..... 66
Other Railways,..... 68

PAGE.

Social Institutions—Chapter VI,.... 70
The Municipal System,.... 71
The Municipal Loan Fund,.... 73
General Legislation,.... 74
The Postal System,.... 76
The Legal and Judicial Systems,.... 76
The Banking System,.... 78
The Press,.... 81

Educational Institutions—Chapter VII,.... 83
University and Colleges of Upper Canada,.... 83
The Normal Schools do do 84
The Grammar Schools do do 85
The Common Schools do do 86
Other Colleges do do 91
The School System of Lower Canada,.... 92

Political Institutions—Chapter VIII,.... 94

Statistics, illustrative of the progress and position of Canada—Chapter IX,.... 98
Population—its increase,.... 98
Emigration,.... 100
Rise of Towns,.... 101
Population by origin.... 102
Religious Census—number of Churches,.... 103
Area of Canada,.... 103
Agricultural Produce, and contrast therein between Canada and Ohio, 104
Revenue and Expenditure,.... 106
Public Securities.... 107
Public Debt of the Province,.... 108

The Climate of Canada—Chapter X,.... 109
Climate of Canada West,.... 109
" Lower Canada,.... 112
Prevailing Winds,.... 113
Longevity in Canada,.... 114

Concluding Remarks,.... 114

Appendix,.... 115

CANADA AND HER RESOURCES.

"Canada, the brightest jewel of the British Crown."

The Province of Canada is attracting increased and deservedly merited attention. Her resources have of late years been rapidly developing, and the growth of her population is steadily and annually augmenting. A bright future is opening out to her, and her progress, agricultural, commercial and industrial, cannot fail to be much accelerated, so soon as the people of Great Britain and of Europe come to be aware of the many advantages which are held out to intending emigrants by this important dependency of the British Crown.

No country in the world,—we boldly aver it,—offers a more desirable residence than Canada, for her attractions consist not only in every material comfort, but also in the gift of political liberty and educational advantages to all her inhabitants; and these attractions are held out, not merely to that class of emigrants who have some small means, or to that other class who are possessed of comparatively greater means, but to whom increasing families and the keen competition of the old world make a change to the new desirable, but also to the industrious mechanic, to the hardy agriculturist, and, in fact, to all classes of settlers.

That such is undoubtedly the case, the following rapid review of her position and resources, however necessarily imperfect, will abundantly demonstrate.

In endeavoring, therefore, to treat the subject in a systematic and concise manner, and yet to present some adequate idea of the Province of Canada and her resources, I now proceed preliminarily to describe the geological structure of the Province,—a subject

which, however interesting to the scientific inquirer, will not probably attract the attention of the general reader. I will then trace in as brief a manner as is consistent with the magnitude of the subject, the geographical outline of the country, exhibiting also its various natural divisions; after which the reader will be directed in successive chapters to a consideration of the natural productions, the manufactures, the commerce, and the social, educational and political institutions of the Province. A chapter will then be devoted to presenting such statistical information as may not have been necessarily interspersed throughout other portions of the work, and a closing chapter will be devoted to the removing of certain prejudices which exist with regard to the climate of Canada.

CHAPTER I.*

GEOLOGICAL STRUCTURE.

To obtain a correct view of the Geological features of the Province of Canada it must be regarded as connected with the physical structure of the bordering States of the American Union on the one hand, and with that of the sister British North American Colonies on the other hand. It will, therefore, be convenient to divide the subject in the first place into two great sections, and drawing a line in continuation of the Hudson River and Lake Champlain Valleys to the vicinity of Quebec, to consider the area to the west of it separately from that on the south of the St. Lawrence to the east, in consequence of important differences in their Geological conditions, each area belonging to a great triangle of fossiliferous strata, resting on supposed primary rocks, and containing coal measures in the centre; but in neither case is it believed that these measures, at least as regards the profitable portion of them, come within the Province. The conditions in which these two great areas differ are the general quiescence and conformable sequence of the formations of the western division, and the violent conditions and unconformable relations prevailing among those of the eastern. To obtain, however, a complete and exhaustive view of the subject, a third great section must be included, comprehending what may be termed Northern Canada.

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* This chapter is chiefly condensed and compiled from the very valuable Reports of the Provincial Geologist, W. E. Logan, Esq., F. R. S.

THE WESTERN DIVISION.

In illustrating the general relations of the rock formations of the Province, the great area in which the western division is included, as connected with the Geology of Canada, may be described as a gigantic trough of fossiliferous strata, conformable from the summit of the coal to the bottom of the very lowest formations, containing organic remains, with a transverse axis reaching from the Wisconsin River and Green Bay, in Lake Michigan, to the neighbourhood of Washington, a distance of nearly 700 miles, and a longitudinal one extending from Quebec in a south-westerly direction to some point beyond the Tenessee River in Alabama. Contained within this vast trough, and resulting from gentle undulations in the strata, there are three important subordinate basins, the centre of each of which spreads out in a gigantic coal field. One of these extends in length from the County of Logan, on the southern borders of Kentucky, in a north-westerly direction to the Rock River in Illinois, where it falls into the Mississippi, a distance of 360 miles, and in breadth from the mouth of the Missouri to the County of Tippecanoe, on the Wabash in Indiana, 200 miles.

Presenting an oval form, this coal field covers 55,000 square miles. The second occupies the heart of the State of Michigan, and reaching 100 miles in an east and west direction, from within 13 leagues of the lake of that name, to Saginaw Bay in Lake Huron, and 150 miles in a north and south line from the neighbourhood of the Rivers Manistee and Ausable, it exhibits an irregular pentagonal shape, and comprises a superficies of 12,000 square miles. The third carboniferous area stretches longitudinally about 600 miles in a north-easterly course, from the State of Tennessee to the north-eastern corner of Pennsylvania, where many outlying patches belong to it, and 170 miles transversely from the north branch of the Potomac in Maryland, to the south-eastern corner of Summit County in Ohio, 12 leagues south of Cleveland on Lake Erie. It comprises 60,000 square miles, and possesses a sinuous subrhomboidal form. The main trunk of the Ohio serpentines through the upper portion of this region for about 400 miles of the upper part of its course. The Susquehanna and its tributaries intersect the north-eastern extremity of the deposit, and the valleys of denudation in which these waters flow, assisting the effect of a series of nearly equidistant undulations in the strata,

there break its continuity into the outliers alluded to, which generally rest on mountain tops in the interrupted prolongation of a number of narrow subsidiary troughs, resulting from the undulations in question, and giving an irregular deeply indented contour to the outcrop of the main body of the coal. The chief part of the outliers, and the main body of the deposit, yield bituminous fuel, as well as the other two great coal fields described; but to the east of the Susquehanna, three large outliers yield anthracite coal.

The undulations which have been mentioned constitute an important feature in the structure of the country between the St. Lawrence and the Atlantic. Three ridges, preserving a remarkable degree of parallelism, have been traced for vast distances, ranging in a sinuous south-westerly course from Lower Canada to Alabama.

From beneath the three great coal fields which have been mentioned the subjacent formations crop out in succession, surrounding their carboniferous nuclei with rudely concentric belts, of greater or less breadth, according to the thickness or dip of the deposit, and taking a wider sweep as they descend in the order of superposition, while they conform, at the same time, in their superficial distribution, to all the sinuosities and irregularities occasioned by geographical and geological undulations. The organic remains of these rocks proclaim them to be contemporaneous with the Silurian and Devonian epochs of Europe, including the old red sandstone. These fossiliferous formations, wherever they have been found in actual contact with the rocks beneath, rest upon masses of the primary order. Without entering upon the question of whether there be evidence of non-fossiliferous sedimentary strata, it will be sufficient for our present purpose to unite all the subjacent rocks, whether metamorphic or primary, and to class them under the latter denomination.

The lowest of the fossiliferous strata is a sandstone of variable quality, more purely silicious towards the bottom, and calciferous towards the top, which gives support to a thick and remarkably persistent deposit of limestone, strongly distinguished by its organic remains. This limestone thus becomes an admirable means of tracing out the perimeter of the great western area under consideration. From the north-west border of North Carolina it sweeps in a broad belt across Virginia to the junction of the Shenandoah and Potomac. Thence, traversing Maryland, it

passes through Pennsylvania, by Harrisburg on the Susquehanna, and Belvidere on the Delaware, accompanied up to this point by the underlying sandstone. Diminished in its thickness it thence crosses New Jersey, and reaching Poughkeepsie it passes up the valley of the Hudson and Champlain, keeping to the east by the river and the lake, and attains the neighbourhood of Missisquoi Bay. Entering Canada it proceeds towards Quebec, and reaches the vicinity of that fortress; and a stratified limestone answering its condition is quarried and burned in the Seigniory of St. Hyacinthe. As Quebec itself does not stand upon the formation, it probably crosses the St. Lawrence higher up the stream; but it may be seen in the quarries of Beauport, and further down the river, and its limit in that direction is to be found near Cape Tourment, where the underlying primary rocks come to the water's edge. Turning at this point, and following the northern outcrop of the deposit up the valley of the St. Lawrence, it is found to run along the foot of a range of syenitic hills of a gneissoid order, which preserve a very even and direct south-westerly course, and down the flank of which the various tributaries of the great river are successively precipitated in rapids and cascades. On the Maskinongé the syenitic range is about twelve miles in a direct line from the St. Lawrence, on the Achigan about twenty, and it strikes the Rivière du Nord about half a mile south of the Village of St. Jerome. Following this stream, the primary rocks, which are close upon its northern bank, gradually assume a course with less of southing in it, until they reach Lachute Mills, where their direction becomes nearly due east. Along this line, from Cape Tourment, the basset edge of the limestone does not in all cases come quite up to the primary rock. There is, occasionally, a space left between the two for the sandstone beneath, and on the Rivière du Nord the calciferous part of this rock, capped by the limestone, is seen in several places in a well defined escarpment about half a mile from the syenitic range, dipping southward at an angle of six degrees, which is probably one or two more than the average inclination along the strike of the northern outcrop thus far traced.

Leaving the Rivière du Nord at Lachute Mills the edge of the fossiliferous strata, still well defined by the rise of the primary rocks from below them, crosses the Township of Chatham, pursuing a direct course to Grenville on the Ottawa, where the calca-

reous deposit is seen at the upper end of the canal. A little above the village the primary range comes upon the river, which may correctly be considered the general division between the two, until we attain the Township of Hull. A bend in the Ottawa there, cutting deep into the limestone, leaves four or five miles breadth of it on its left bank, and the formation displayed in lofty precipices in the neighbourhood of Bytown affords the magnificent scenery of the Chaudière Falls. It reaches, it is understood, the Island of Allumettes, and thence, turning southward, runs through the Townships of Pakenham, Ramsay and Drummond, crosses the Rideau Canal and Rideau Lake in Elmsley, where, with the subjacent sandstone, it is seen in section at the Upper Narrows, resting on the primary rocks, and dipping to the north of east at an angle of four degrees; and sweeping round the adjoining corner of Bastard and Yonge it traverses Elizabethtown, and reaches the St. Lawrence in the neighbourhood of Brockville. The limestone deposit, following the St. Lawrence down to St. Regis, has a wide spread of the sandstone coming from beneath on the United States side of the river, the lower edge of which passes by Canton, Hopkins and Malone, to Chateauguay, in a line north of east. Here it makes a sudden turn to the south-east, and the limestone, sweeping round at its proportionate distance, comes upon the western shore of Lake Champlain, at the mouth of the Chateauguay River, about five miles up which its base is seen. Running along the shore of the lake it reaches Peru, where the basset edges of both sedimentary deposits come close together. Following up the lake they attain Whitehall. They then bend round to the valley of the Mohawk, ascending which they arrive in the neighbourhood of Trenton, where a grand display of the limestone in the falls of that name gives origin to the New York designation of the upper part of the deposit. From this the limestone gains the Black River, and follows down the whole of its course to Lake Ontario, of which it forms the coast, from Ellisburgh to a point below Cape St. Vincent. Again entering Canada, it composes Wolfe Island, and the upper part of Howe Island, and it is seen resting on the primary rocks in Cedar Island, without the interposition of the sandstone. Kingston stands upon the formation, and the base of it, cropping out several miles to the north of the town, strikes away to the Townships of Madoc and Marmora, in each of which the primary rocks are seen giving it support near their respective iron works.

Then it runs to Rama on Lake Simcoe, and sinks under the waters of Lake Huron in Georgian Bay. Between Kingston and Lake Huron the general dip of the formation is so small that it is next to impracticable to measure it. The breadth of the band it presents is consequently considerable, thirty-five miles being the measure from the base at Marmora to its summit at Newcastle on Lake Ontario. The north-eastern and northern shores of Lake Huron are described by Dr. Bigsby as presenting a primary country, and they may be taken as the boundary of the sedimentary deposit we are following, from the point where it is lost beneath the waters of Georgian Bay, until it re-appears at St. Mary's Falls, at the exit of Lake Superior, where the Michigan geologists describe a limestone apparently answering its conditions. Thence it reaches Green Bay on Lake Michigan, and proceeds to the Wisconsin River, following it down to its junction with the Mississippi.

SERIES OF FOSSILIFEROUS DEPOSITS.

Having thus traced, as far as necessary, the contour of the lowest deposits of the fossiliferous area under description, and having given the position and superficies of the coal-fields which spread out at the summit of the series, it will be understood that the whole of the space between the perimeter of the latter and the boundary of the former is occupied by the various belts or zones resulting from the outcrops of the successive formations. The lowest of these fossiliferous deposits is the sandstone already mentioned. It assumes various lithological appearances. At its base it is sometimes a quartz rock, hard and vitrious, and it frequently presents the appearance of a conglomerate, as at Gananoque. It is often an even-bedded, even-grained sandstone, yellowish brown and compact, or white and friable. But the typical quality of the whole mass, as seen at Potsdam in New York, where it is extensively quarried, is a yellowish brown sandstone. It is said to contain few fossils. The total thickness of the formation is 300 feet. This silicious deposit passes into a sandstone of calciferous quality, which the geologists of Pennsylvania class with the former, but those of New York consider a distinct formation. It is in general a fine-grained arenaceous limestone, with some beds of a pure calcareous quality. Its thickness is about 250 feet. To this succeeds the important calcareous deposit of which the course has been so extensively traced. The

lower part of this formation consists of a dark irregular limestone. It has a thickness of 130 feet, and upon it rests a dark blueish compact hard limestone, occasionally yielding marble. It has some drab colored beds, giving water lime. The thickness of this deposit may be about 140 feet. As well as the previous part, it is considered to possess peculiar fossils, and with it constitutes the New York inferior limestone formation. The superior formation is based in some parts upon a valuable ten feet bed of black marble, extensively worked on Lake Champlain, above which occur various strata of black limestone, alternating more or less with black bituminous shale, and associated in some places with one or two important bands of a grey colour, and of a more crystalline texture. This grey stone is extensively quarried at Montreal. At the top of the general deposit, which in New York is known as the Trenton limestone, the bituminous shale predominates over the limestone, and affords a passage to the succeeding formation.

The next deposit in the order of superposition is the black bituminous shale, differing very little from the argillaceous part of the previous formation. In Upper Canada it may be seen at Whitby, whence it has a run to Nottawasaga Bay, and in Lower Canada on the Montreal side of the St. Lawrence. It has distinctive fossils. It does not exceed 100 feet in thickness.

Upon the preceding lies a deposit of thin grey sandstone strata alternating with fine easily disintegrating argillaceous shale beds of a greenish color. Occasionally there are variations in its lithological character, there being sometimes a band of red argillaceous and purple argillaceous shale, and above it a set of argillaceous strata, composed of flattened laminated pieces, with a glossy black exterior. Its thickness may be estimated at 1400 feet.

The next superimposed deposit is a grey even-bedded sandstone, of a rather fine-grained durable quality, used for building purposes. It has few fossils, and its thickness is about 100 feet.

The total thickness of the rocks enumerated does not reach 2500 feet. The summit of the formation last mentioned, after running up the south side of the Mohawk valley, gains the State of New York at Oswego. Thence, in a course parallel to the outcrops of the formations above it, it reaches Oakville near the head of Lake Ontario, from which point it bends round to Collingwood, on Nottawasaga Bay in Lake Huron. If a line, therefore, be drawn between

these two points, on the two lakes, it is probable, taking into consideration the extremely moderate dip and undisturbed condition of the strata, that no deposit higher in the series than the grey sandstone will be found in any part of Canada between that line and Quebec. There are still to be interposed between the grey sandstone and the true coal measures a mass of strata equal at the lowest computation to between 4000 and 5000 feet, and we are therefore not warranted reasonably to anticipate the occurrence of any part of the true coal measure in the district in question,—a conclusion which every day's experience is justifying.

Continuing an enumeration of the formations in an ascending order of superposition, the next in succession to the grey sandstone is a variegated red and green, marly and shaly sandstone, of a crumbly nature, with which are associated some bands of quartzose grey sandstone. Brine springs issue from this formation, one of which exists at St. Catherines in Upper Canada, and is used for medicinal purposes, an Artesian well having been sunk into it. The thickness of this deposit is estimated at about 600 feet.

Upon the preceding rests a set of strata consisting of bright green shales, associated with a partial bed of oolitic fossiliferous iron ore, of which the greatest observed thickness in any place is two feet, and interstratified with two bands of more or less impure limestone, containing stratified organic remains. The thickness of the deposit may be estimated at 80 feet.

The next formation consists of calcareo-argillaceous shale of a blueish color, abundantly fossiliferous, on which a few beds of silicio-argillaceous limestone constitute a passage into a strong calcareous rock above. The lower part of this consists of a cemented mass of broken encrinital columns, often beautifully variegated with red, to which succeeds a thick-bedded grey limestone, followed by one of a darker color, upon which rests a brownish bituminous limestone, sparry below, and marked by the presence of sulphurets of zinc and of lead above, and the whole is crowned by a set of slaty dark grey calcareous beds with mamillated surfaces separated by thin laminæ of bituminous shale. It is over a slope and precipice which presents the whole thickness of this limestone that the rapids and cataract of Niagara fall. It is said to be in the north-western development of the limestone of this Niagara group that the great lead mines of Wisconsin exist.

We now come to a deposit of valuable economic character: in

the lower part it consists of variegated green-spotted red shales, surmounted by greenish and drab-coloured slaty limestone strata, alternating with red shales, which are followed by brownish calcareous and argillaceous shales, enclosing white and dark-coloured masses of gypsum, of which there appear to be two ranges capable of being profitably worked, separated from one another by a band of porous limestone. Cavities of great magnitude exist in the gypsiferous part of the deposit, and the whole is capped by calcareous strata, fit for hydraulic cement. This formation is the seat of a number of valuable brine springs. The fossils of the formation are not numerous, and its thickness is about 700 feet.

This deposit, so valuable for its gypsum, salt and hydraulic lime, occupies a belt of country on the south side of Lake Ontario, and, passing into Canada across the Niagara River, occupies nearly all the neck of land separating Lake Ontario from Lake Erie. This whole assemblage of deposits skirts the shore of the former lake through Niagara County, and, attaining the extremity of it, the strike turns northward towards Cabot's Head on Lake Huron. On the east side of it is the red and green sandstone, and to the west will be the gypsiferous rocks, some of which are already worked for their plaster, on the Grand River, near the Town of Paris, U. C. In the general classification of the New-York system of formations these rocks are followed by five successive deposits of limestone, which thin out before reaching Canada, their thickness being 200 feet.

To these calcareous rocks succeed three deposits of a silicious character, of an average thickness in New York of 100 feet, which also thin out before reaching Canada.

Resting on the sandstone in the eastern part of New York, and on the hydraulic limestone of the west, the next deposit in ascending order is calcareous. It consists of beds of limestone of a light grey color. It yields a handsome variegated marble. The thickness is about 70 feet.

These united bands of limestone strike into Canada on the Niagara River, whence they run westward along the shore of Lake Erie for some distance. They are recognized again in Ohio and Michigan at the head of the lake, and they form a belt across the extremity of the southern peninsula of Michigan. In Canada patches of the immediately succeeding deposits may be found in parts of the old Western District. The lowest of these is a black

bituminous shale. The thickness of this deposit is about 50 feet, and it passes into a dark shale of a more slaty character, and gradually passes into a stronger rock. This again becomes a blueish-grey calcareous shale at the top, and is followed by a thin band of encrinal limestone, to which succeeds a persistent greyish-blue marly rock. Its fossils are numerous, and its thickness, which diminishes from east to west from 1000 to 300 feet, may be stated at 500 feet. On the top of this group rests a bed of partial limestone: its greatest thickness on the south side of Lake Ontario is 20 feet, and it dwindles down to nothing approaching Lake Erie. On the preceding limestone rests a deposit of deep black consisttent fissile shales. Its thickness varies from 150 feet to 25 feet, thinning westwardly.

The next formation of the series consists of a group of rocks of a more or less arenaceous quality. The lowest of these is a greenish argillo-arenaceous shale, which is followed by a developement of green and black arenaceous shales, interstratified with thin beds of sandstone. The total thickness of the formation is estimated at 1000 feet.

To this succeeds a mass of grey greenish-grey and olive flaggy sandstones interstratified with shales, sometimes running into an impure limestone. Towards the top the sandstone occasionally presents the character of a conglomerate. The thickness of the formation is 1500 feet.

The next superimposed formation, where it is fully developed, consists of sandstones, argillaceous and arenaceous shales, and impure arenaceous limestones and conglomerates. The general colour of the deposit is red. In the eastern part of New York, among the Catskill Mountains, the thickness of the formation is said to be little under 2500 feet, but it thins down to the westward, and on the south side of Lake Erie it dies away altogether.

Such is the general character of the various deposits which fill up the great trough under consideration, within which the western section of Canada, as above delineated, is included.

INFERIOR ROCKS.

The general figure of the non-fossiliferous rocks upon which the organic series rests may be inferred from the fossiliferous contour already described. In so far as Canada is concerned they constitute the whole of the northern parts of the Province, stretching

from one extremity to the other. They compose the north shores of the St. Lawrence and Ottawa, with the exception of the narrow strip of fossiliferous deposits between Cape Tourment and Grenville. They form the northern and eastern shores of Lake Superior, and the northern coast of Lake Huron, and from between Malchadash Bay in the latter and Allumettes Island in the Ottawa they run into a south-eastern spur, which terminates in a huge mountainous peninsular mass lying between Lake Champlain and Lake Ontario, and joined to the primary body by the narrow Isthmus of the Thousand Islands.

These rocks consist of talcose and other slates, quartz rock, gneiss, limestone, serpentine, granite, syenite, and their subordinate masses. The limestones and serpentines yield marbles of various beautiful descriptions. The feldspathic rocks, in their decomposition, afford good porcelain clays. Copper ores are found in several localities, veins of lead appear, plumbago is abundantly developed, chromate of iron is known to exist, and the whole system appears to be associated with large and valuable supplies of the magnetic and specular oxides of iron.

The extraordinary abundance in which these two latter ores are found render them very valuable in an economic point of view.

At the summit of the rocks under description in the peninsula lying between Lake Superior and Lake Michigan an important collection of copper veins has been discovered.

TERTIARY AND ALLUVIAL DEPOSITS.

Over many parts of the great area which has been described, whether primary or transitive, there is spread a more recent sedimentary deposit, still in a soft condition, and consisting of various beds of clay, sand and gravel. These beds are characterised, up to heights of 500 feet above the level of the ocean, by the frequent presence of marine shells of the same species as now inhabit the Gulf of the St. Lawrence, and northern seas. Fifteen species have been found at Port Neuf at the height of 300 feet, and five of the same species on the Montreal Mountain, at about 460 feet above salt water level, while in various parts of the St. Lawrence and Champlain vallies such remains are found at more moderate elevations.

Still more recent than the tertiary deposits is the alluvial drift with which are associated boulders of igneous and other rocks,

with frequent extensive deposits of peat and fresh water shell marl, while bog iron ore is often met with in tracts sufficiently large and rich to give profitable employment to capital. Two of these beds are already worked.

Such then is a general sketch of the main features of the physical structure of the area with which the geology of that part of the Province west of Quebec is connected, chiefly as ascertained from the various surveys of the neighbouring States.

This geological division of Canada may be defined as follows, viz: extending to the limits of the Province in an opposite direction from the eastern division, and bounded on the north by a line skirting the St. Lawrence, the Ottawa, the Mattawa, Lake Nipissing, and the French River to Lake Huron, and thence along the northern shore of this lake to Sault St. Marie, on Lake Superior, and spreading over 50,000 square miles. Of course, the limits of this treatise prevent the filling in of the sketch by the result of actual surveys; but those who may desire to investigate the subject more fully are referred to the exceedingly valuable Reports of the Provincial Geologist, now about to be republished by the Legislature of Canada in a revised edition, and which present the results of much pains-taking labour and accurate scientific observation.

EASTERN DIVISION.

This division includes all that part of the Province which lies to the eastward of the already assumed divisional line, and to the south of the St. Lawrence, including, however, the Island of Anticosti, and covering a space of 40,000 square miles.

Although the labours of Dr. Gesner in Nova Scotia and New Brunswick have done much to bring before the world some of the main features of the geology of the Lower Provinces, there is still much wanting to enable such inferences to be drawn as would materially assist the investigation of Eastern Canada. The State of Vermont has also not yet been examined, and the State of Maine only partially.

In very general terms, therefore, the area to which Eastern Canada appertains may be described as a sedimentary trough, resting upon primary rocks, with a transverse axis reaching from Labrador in a south-east direction to the Atlantic Coast of Nova

Scotia, and a longitudinal one extending probably from the centre of Newfoundland to some uncertain point in the New England States of the American Union. The centre of it is occupied by a great coal field covering nearly the whole of New Brunswick and a considerable part of Nova Scotia, Cape Breton Island and the south-western corner of Newfoundland, while there is a large portion of it lost beneath the Gulf of St. Lawrence. It would be premature to assert or deny that rocks of more recent secondary age rest upon this, but the lower part of it appears to hold important deposits of gypsum. The carboniferous rocks are affected by disturbances on the south side of the trough in Nova Scotia, giving origin to undulations which are subordinate to its longitudinal axis, while they appear to have suffered less from such disturbances, either on the centre or on the north, where the coal measures, from Shediac to Miscou, have very moderate angles of inclination. Both on the south and on the north the coal formation seems to rest unconformably on the rocks below, and in these the flexures produced prior to the deposit of that formation are so violent that in many places the strata come against its base nearly at right angles: from which it results that the coal measures rest sometimes upon the basset edges of the highest subjacent sedimentary deposits, and sometimes upon the granite, the carboniferous perimeter being no guide whatever to the geographical range of anything coming from beneath. The boundary of these lower formations in Canada is the north bank of the St. Lawrence from Labrador to Cape Tourment near Quebec; but what their succession may be, and how far they agree in fossil, lithological or economical results, can only be determined after careful examination. This examination is being steadily proceeded with, and surveys have been made of several sections of the eastern division, but as yet a connected view of the entire area cannot be presented.

NORTHERN DIVISION.

There still remains what may be termed Northern Canada, extending from the British limit on Lake Superior to Labrador, and lying between the northern boundary of the eastern and western divisions, and the height of land separating the Hudson Bay waters from those of the St. Lawrence. This portion, nearly

three times as large as the other parts together, may comprehend 250,000 square miles.

Of this great division comparatively little is yet known, though of some portions of it, on Lake Superior and on the north shore of Lake Huron, surveys have been made, in consequence of the discovery of a copper-bearing region there. On the latter shore twenty-two copper mining locations were issued by the Government, two of which are now worked, and one of these, the Bruce Mines, on an extensive scale.

This shore presents an undulating country rising into hills which sometimes attain the height of 400 and 700 feet above the lake. These occasionally exhibit rugged escarpments, and naked rocky surfaces, but in general their summits are rounded, and their flanks with the valleys well clothed with trees, often of large growth, and of such species as are valuable in commerce, and in many places giving promise of a good arable soil.

The Geological survey of the Province is proceeding carefully and steadily, and its results will be very advantageous to the Province, and beneficial to general science. At the Great Industrial Exhibition in London in 1851, a geological map of the geological formations of Canada, so far as known, was exhibited, and a collection of minerals and geological specimens exhibited, of so complete and comprehensive a character as to elicit the ensuing high testimony of approval from the jury of the class comprehending mineral products.

"Of all the British Colonies, Canada is that whose exhibition is the most interesting and complete, and one may even say that it is even superior so far as the mineral kingdom is concerned to all countries that have forwarded their products to the Exhibition. This arises from the fact that the collection has been made in a systematic manner, and it results that the study of it furnishes the means of appreciating at once the geological structure and mineral resources of Canada."

Similar judicious efforts have been made for the representation of Canadian geology and mineralogy, and Canadian interests generally, at the Paris Exposition, which no doubt will be attended with a like result. In order to secure the representation of the various departments of Canadian industry at this Exhibi-

tion, the Legislature has voted a sum of £10,000 currency. A large and carefully chosen selection of minerals has been sent for exhibition at Paris, which will contribute materially towards bringing the great resources of Canada prominently into view.

CHAPTER II.

GEOGRAPHICAL FEATURES.

The Province of Canada, as will be seen by the Map, embraces a wide and extremely diversified section of country, extending between latitude 42° and 53° N., and longitude 64° and 90° W., comprising an area of 346,863 square miles, as estimated by Bouchette, and comprehending great variety of climate. It is bounded on the north by the Hudson's Bay territory, on the west by Lakes Superior and Huron, on the south by Lakes Erie and Ontario, and on the east by the River and Gulf of St. Lawrence, New Brunswick, and a portion of the United States, viz : the States of New York, Vermont, New Hampshire, and Maine.

The Province of Canada, called the Province of Quebec prior to 1791, was in that year divided into the two Provinces of Upper and Lower Canada, under distinct Governments, but in the year 1840 the Provinces were re-united by Act of the Imperial Legislature, and constituted into one Province—"the Province of Canada."

Having defined the general boundaries of the Province, it will be convenient to notice separately the several tracts of country embraced in the two Provinces, as elsewhere in this treatise references will be made to distinctions, social and political, which took their origin under the former divisions of the Province. The former Province of Lower Canada was comprised between 45° and 52° of north latitude, embracing an area of 205,863 square miles, exclusively of the surface occupied by the River St. Lawrence, and a portion of the Gulf of St. Lawrence, embracing 52,000 square miles. The Gulf of St. Lawrence, into which are poured the waters of the mighty river of that name, is formed between the western part of Newfoundland, the eastern shores of Labrador, the eastern extremity of the Province of New Brunswick, part of the Province of Nova Scotia, and the Island of Cape Breton. It communicates with the Atlantic Ocean by three different passa-

ges, viz : on the north by the straits of Belle Isle, between Labrador and the Island of Newfoundland, on the south-east by the passage between Cape Ray, the south-west extremity of the latter island and the north of Cape Breton Island, and lastly by the narrow channel named the Gut of Canso, which divides Cape Breton from Nova Scotia. On its south side is the island of St. John, more commonly called Prince Edward's Island, a British Province under a Governor and Legislature of its own. To the northward of Prince Edward's Island are the Magdalen Islands, which comprise an aggregate area of 78,000 acres. They are seven in number, occupied as fishing stations, and are included in the Government of Canada, being for the purpose of representation comprehended in the County of Gaspé. The population of these islands at the period of the last Census was 2500. Ochres of various colours, and gypsum, or plaster of Paris, are abundant, and compose several miles of the seaward cliffs.

Within the Gulf of the St. Lawrence also, and at the very threshold of this great Province, lies the large Island of Anticosti. It is situated between the 49th and 50th parallels of north latitude, and the 61st and 65th degrees of west longitude, 420 miles below Quebec. It has never been surveyed, but is deserving of attention, as its position admirably adapts it for becoming an entrepôt for carrying on the trade between Canada and Europe. It comprises nearly two millions of acres. It is well wooded, and much of the land is believed to be arable. There are excellent harbours on its coasts, and its sea and river fisheries are exceedingly valuable.

LOWER CANADA.

To present, however, a distinct Geographical view of the Province of Lower Canada, it may be well to notice it in sections, as indicated by its natural divisions, adopting those defined by another writer, R. Montgomery Martin. I therefore view firstly the country on the north side of the St. Lawrence, and then that on the south side.

NORTH SIDE OF THE ST. LAWRENCE.

1st. The most northerly and easterly section of the Province of Canada, extending from the Labrador Coast to the Saguenay River, latitude 48° 5′, longitude 69° 37′, occupies a front of 650 miles. A bold mountainous country characterises the coast line,

but of the interior little is known. The country between these two points is well watered by numerous rivers.

2nd. The second geographical division of the Province north of the St. Lawrence is that comprised between the mouths of the Saguenay and St. Maurice Rivers. The distance between these rivers is about 200 miles, the City of Quebec being midway between them. From Quebec downwards to the Saguenay, the northern shore of the St. Lawrence presents a continuous mountain range, but beyond this the interior of the country is in some places flat, in others undulating, with chains of hills of moderate height, and is well watered by numerous lakes and rivers. It is represented as being susceptible of cultivation, and an agricultural settlement of French Canadians is being formed on a considerable scale, with good prospects of success. There are several other localities in which good settlements already exist. On the River Saguenay itself, (which is a magnificent stream of great depth, the scenery of its shores being very grand, the rocks towering up in some places, as at Cape Eternity, to the height of 3000 feet,) large operations in the manufacture of deals have been for many years carried on, and several ships have been there annually laden for Britain. The climate in this region of country is not more severe than at Quebec. The country is well wooded, and a company has been incorporated to construct a tram-way from the City of Quebec, in the first instance, to the Lake of St. John, a large lake in the interior, and eventually to the Saguenay; the intended object being to furnish the citizens with supplies of fuel, and also to open up the country for settlement. The City of Quebec contains a population of 50,000. It is romantically situated, and the view from the Citadel and the Upper Town is grand and extensive. It is the great shipping depôt of the Canada lumber trade, and has also a large trade in ship building, while for four years past it has been the seat of the Provincial Government.

The country north-west of Quebec, between that city and the St. Maurice, is not so bold as it is to the north-east, towards the Saguenay. It is undulating, and along the St. Lawrence is thickly settled. The Rivers Jacques Cartier, Port Neuf, St. Annes, and Batiscan, water it. On the Port Neuf there is a large paper mill, and other manufactories.

3rd. The third territorial section north of the St. Lawrence embraces the country lying between the St. Maurice River and

the junction of the Ottawa and the St. Lawrence, and extending on the north shore of the Ottawa to the extreme limit of Lower Canada. A large and valuable tract of country lies in rear of Three Rivers, and is drained by the St. Maurice. Near Three Rivers are extensive iron ore deposits and iron works. Within a few years the region of the St. Maurice has been opened up to the enterprise of the timber manufacturers: several American firms have largely engaged in getting out timber; extensive saw mills have been erected; and the ancient Town of Three Rivers has received an impetus, and is rapidly advancing. The St. Maurice receives many tributaries, some of them of great size. Thirty-three miles above Three Rivers the river becomes navigable for an extent of seventy-five miles. Government has here expended a considerable sum in the erection of slides for the transit of timber. Beyond Three Rivers to Montreal the country along the frontier is thickly populated. The Island of Montreal and Isle Jésus are densely settled. The soil is good, and many of the farms are conducted on scientific principles, and with great profit, in consequence of their proximity to the local market of the City of Montreal. The Island of Montreal is thirty-two miles long by ten broad. Isle Jésus is twenty-one miles long by six broad. The Island of Montreal, containing the City of Montreal, the commercial emporium of Canada, with a population of 70,000, lies between the Ottawa and St. Lawrence. From the head of this island upward is the great basin drained by the Ottawa and its tributaries, and situated in the heart of the united Province of Canada, occupying nearly one quarter of its extent, which is known as the Ottawa country.

THE OTTAWA COUNTRY.

The length of the course of the Ottawa River is about 780 miles. From its source it bends in a south-west course, and after receiving several tributaries from the height of land separating its waters from the Hudson's Bay, it enters Lake Temiscaming. From its entrance into this lake downward the course of the Ottawa has been surveyed, and is well known.*

* For this interesting sketch the writer is indebted to the Second Report of the Committee of the House of Assembly on Railways, it having been originally contributed to one of the Ottawa newspapers, and extracted therefrom by the Committee.

At the head of the lake the Blanche River falls in, coming about ninety miles from the north. Thirty-four miles farther down the lake it receives the Montreal River, coming 120 miles from the north-west: the latter is the canoe route from the Ottawa to Hudson's Bay. Six miles lower, on the east side, it receives the Keepawa, a river of great size, passing through an unknown country, and coming from a lake said to be fifty miles long. The Keepawa exceeds in volume the largest rivers in Great Britain, and in its descent to Lake Temiscaming presents a magnificent cascade 120 feet in height. Though the middle course of this river is unknown, its commencement, if such it can be called, has been surveyed, and it is extraordinary in its nature. Ninety miles above its mouth it was found flowing slowly but very deep, and nearly three hundred feet wide, and issuing from the west side of Lake Keepawa. Out of the southern extremity of that large lake, the River Dumoine, which enters the Ottawa a hundred miles below the Keepawa, was also found flowing swiftly and very deep, and 150 feet in width, thus presenting a phenomenon similar to the connection of the Rio Negro and the Orinoco.

From the Long Sault at the foot of Lake Temiscaming, 233 miles above Bytown, and 360 miles from the mouth of the Ottawa, down to Jeux Joachim Rapids, at the head of Deep River, that is for eighty-nine miles, the Ottawa with the exception of seventeen miles below the Long Sault, and some other intervals, is rapid, and is not navigable except for canoes. Besides other tributaries in the interval, at 197 miles from Bytown, it receives on the west side the Mattawa, which is the highway for canoes going to Lake Huron, by Lake Nipissing. From the Mattawa the Ottawa flows east-by-south to the head of Deep River reach, nine miles above where it receives the River Dumoine from the north.

From the head of Deep River, as this part of the Ottawa is called, to the foot of Upper Allumettes Lake, two miles below the village of Pembroke, is an uninterrupted reach of navigable water, forty-three miles in length. The general direction of the river in this part is south-east. The mountains along the north side of Deep River are upwards of a thousand feet in height, and the many wooded islands of Allumettes Lake render the scenery of this part of the Ottawa magnificent and exceedingly picturesque —far surpassing the celebrated Lake of the Thousand Islands on the St. Lawrence.

Passing the short rapid of Allumettes, and turning northward, round the lower end of Allumettes Island, which is fourteen miles long, and eight at its greatest width, and turning down south-east through Coulonge Lake, and passing behind the nearly similar Islands of Calumet, to the head of the Calumet Falls, the Ottawa presents, with the exception of one slight rapid, a reach of fifty miles of navigable water. The mountains on the north side of Coulonge Lake, which rise apparently to the height of 1500 feet, add a degree of grandeur to the scenery, which is in other respects beautiful and varied. In the Upper Allumettes Lake, 115 miles from Bytown, the Ottawa receives from the west the Petewawa, one of its largest tributaries. This river is 140 miles in length, and drains an area of 2200 square miles. At Pembroke, nine miles lower down, on the same side, an inferior stream, the Indian River, also empties itself into the Ottawa.

At the head of Lake Coulogne, seventy-nine miles from Bytown, it receives from the north the Black River, 130 miles in length, draining an area of 1120 square miles; and nine miles lower, on the same side, the River Coulonge, which is probably 160 miles in length, with a valley of 1800 square miles.

From the head of the Calumet Falls to Portage du Fort, the head of the steamboat navigation, a distance of eight miles, there are impassable rapids. Fifty miles above Bytown the Ottawa receives on the west the Bonnechère, 110 miles in length, draining an area of 980 miles. Eleven miles lower, it receives the Madawaska, one of its greatest feeders, a river 210 miles in length, and draining 4100 square miles.

Thirty-seven miles above Bytown there is an interruption in the navigation, caused by three miles of rapids and falls, to pass which a railroad has been made. At the foot of the rapids the Ottawa divides among islands into numerous channels, presenting a most imposing array of separate falls.

Six miles above Bytown begin the rapids terminating in the Chaudière Falls, which, though inferior in impressive grandeur to the Falls of Niagara, are perhaps more permanently interesting, as presenting greater variety.

The greatest height of the Chaudière Falls is about forty feet. Arrayed in every imaginable variety of form, in vast dark masses, in graceful cascades or in tumbling spray, they have been well described as a hundred rivers struggling for a passage. Not the

least interesting feature which they present is the Lost Chaudière, where a body of water greater in volume than the Thames at London is quietly sucked down, and disappears under ground.

At Bytown the Ottawa receives the Rideau from the west, running a course of 116 miles, and draining an area of 1350 square miles. A mile lower it receives from the north its greatest tributary, the Gatineau, which, with a course probably of 420 miles, drains an area of 12,000 square miles. For about 200 miles the upper course of the river is in the unknown northern country. At the farthest point surveyed, 217 miles from its mouth, the Gatineau is still a noble stream, a thousand feet wide, diminished in depth but not in width.

Eighteen miles lower down, the Rivière du Lièvre enters from the north, after running a course of 260 miles in length, and draining an area of 4100 square miles. Fifteen miles below it the Ottawa receives the North and South Nation Rivers on either side, the former 95 and the latter 100 miles in length. Twenty-two miles further, the River Rouge, 90 miles long, enters from the north. Twenty-one miles lower, the Rivière du Nord, 160 miles in length, comes in on the same side, and lastly just above its mouth it receives the River Assumption, which has a course of 130 miles.

From Bytown the river is navigable to Grenville, a distance of fifty-eight miles, where the rapids that occur for twelve miles are avoided by a succession of canals. Twenty-three miles lower, at one of the mouths of the Ottawa, a single lock, to avoid a slight rapid, gives a passage into Lake St. Louis, an expansion of the St. Lawrence above Montreal.

The remaining half of the Ottawa's waters find their way to the St. Lawrence by passing in two channels behind the Island of Montreal and the Isle Jésus, in a course of thirty-one miles. They are interrupted with rapids, still it is by one of them that all the Ottawa lumber passes to market. At Bout de l'Isle, therefore, the Ottawa is finally merged in the St. Lawrence, 130 miles below Bytown.

The most prominent characteristic of the Ottawa is its great volume. Even above Bytown, where it has to receive tributaries equal to the Hudson, the Shannon, the Thames, the Tweed, the Spey and the Clyde, it displays, when unconfined, a width of half a mile of strong boiling rapid, and when at the highest, while the north waters are passing, the volume, by calculated approximation,

is fully equal to that passing Niagara, that is double the common volume of the Ganges.

Taking a birdseye view of the valley of the Ottawa, we see spread out before us a country equal to eight times the State of Vermont, or ten times that of Massachusetts, with its great artery the Ottawa curving through it, resembling the Rhine in length of course, and the Danube in magnitude.

This immense region overlies a variety of geological formations, and presents all their characteristic features, from the level uniform surface of the silurian system, which prevails along a great extent of the Ottawa, to the rugged and romantic ridges in the metamorphic and primitive formations which stretch far away to the north and north-west.

As far as our knowledge of the country extends, we find the greater part of it covered with a luxuriant growth of red and white pine timber, making the most valuable forests in the world, abundantly intersected with large rivers, fitted to convey the timber to market, when manufactured.

The remaining portion of it, if not so valuably wooded, presents a very extensive and advantageous field for settlement. Apart from the numeraus townships already surveyed and partly settled, and the large tracts of good land interspersed throughout the timber country, the great region on the upper course of the western tributaries of the Ottawa, behind the red pine country, exceeds the State of New Hampshire in extent, with an equal climate and superior soil. It is generally a beautiful undulating country, wooded with a rich growth of maple, beech, birch, elm, &c., and watered with lakes and streams affording numerous mill-sites, and abounding in fish. Flanking on the one side the lumbering country, which presents an excellent market for produce, and adjoining Lake Huron on the other, the situation, though comparatively inland, is highly advantageous.

In the diversity of resources the Ottawa country above described, part of which is included in Upper Canada, presents unusual attractions alike to agricultural industry and commercial enterprise.

SOUTH SIDE OF THE ST. LAWRENCE.

4th. We now view the Province on the south side of the St. Lawrence, beginning as before at the sea coast, on which the large District of Gaspé, and populous Counties of Gaspé and Bonaven-

ture are situate. This tract more properly belongs to New Brunswick than to Lower Canada, and lies between the parallels of 47° 18′ to 49° 22′ north latitude, and 64° 12′ to 67° 53′ west longitude, bounded on the north by the River St. Lawrence, on the east by the Gulf of the same name, on the south by the Bay of Chaleurs, adjoining New Brunswick, and on the west by the Lower Canada territory; having its greatest width from north to south about ninety miles, and with a sea coast extending 350 miles from Cape Chat round to the head of Ristigouche Bay. The face of the country is uneven, with a range of mountains skirting the St. Lawrance to the north, and another at no remote distance from the shores of Ristigouche River and Bay of Chaleurs; between these ridges is an elevated and broken valley occasionally intersected by deep ravines. The district is well wooded, and watered by numerous rivers and lakes, the soil rich and yielding abundantly when tilled. The sea beach is low (with the exception of Cape Gaspé which is high, with perpendicular cliffs,) and is frequently used as the highway of the territory behind it, the land rises into high round hills well wooded.

The chief rivers are the Ristigouche, into which fall the Pseudy, Goummitz, Guadamgonichone, and Metapediac; the Grand and Little Nouvelle, Grand and Little Essecumiac, Caplin, Bonaventure, East Nouvelle, and Port Daniel, which discharge themselves into the Bay of Chaleurs; Grand and Little Pabos, Grande Rivière, and Mal Bay River, flowing into the Gulf of the St. Lawrence; the River St. John and north-east and south-west branches fall into Gaspé Bay. There are also many lakes.

5th. The country comprised between the western boundary of Gaspé and the east of the Chaudière River has a front along the St. Lawrence River to the north-west, of 257 miles, and is bounded to the south-east by the high lands dividing the British from the United States territories. These high lands are sixty-two miles from the St. Lawrence at their nearest point, but on approaching the Chaudière River they diverge southwardly. The frontier is thickly populated, the southern bank of the river from Quebec to Trois Pistoles, a distance of about 160 miles, inclusively of the frontage of the fertile Island of Orleans, presenting the appearence of one continuous village of neat white farm-houses. This results from the dwellings being all erected on the fronts of the farms. Rivière du Loup and Kakouna in the summer season

have become of late years places of considerable resort as watering places. The Provincial Government have lately constructed several large wharves at various points along the St. Lawrence below Quebec, for the accommodation of the inhabitants, and for the use of vessels. The physical aspect of this territory, embracing about 19,000 square miles, may be characterised as a hilly region abounding in extensive valleys. The immediate border of the St. Lawrence is flat, soon, however, rising into irregular ridges, and attaining an elevated and extensive tableau. At the distance of fifteen to twenty miles from the shores of the St. Lawrence the tableau gently descends towards the River St. John, beyond which it again re-ascends, acquiring a greater degree of altitude towards the sources of the Allegash, finally merging in the Connecticut range of mountains.

6th. The last section of Lower Canada, south of the St. Lawrence, is that highly valuable tract west of the River Chaudière, fronting the St. Lawrence, and having in the rear the high lands of Connecticut, and the parallel of the 45° of north latitude, which constitutes the south and south-east boundary of Lower Canada, where the latter is divided from the American States of New Hampshire, Vermont, and New York. The superficial extent of this tract is 18,864 miles. The physical aspect varies throughout this extensive section: at the mouth of the Chaudière the banks of the St. Lawrence exhibit the boldness for which they are remarkable at Quebec and Point Levi, but proceeding westward they gradually subside to a moderate elevation, till they sink into the flats of Baie du Febvre and the marshy shores of Lake St. Peter, where the country becomes a richly luxuriant plain.

Proceeding from Lake St. Peter towards Montreal the boldness and grandeur of the country about Quebec may be contrasted with the picturesque champaigne beauties of the Richelieu, Verchères, Chambly, and Laprairie districts. In the former especially the eye of the spectator is delighted with a succession of rich and fruitful fields, luxuriant meadows, flourishing settlements, neat homesteads, and rising villages, adorning the banks of the Richelieu, the Yamaska, and the St. Lawrence, whilst in the distance are seen the towering mountains of Rouville and Chambly, Rougemont, Mount Johnson, and Boucherville, rising majestically above the common level. As the country recedes from the St. Lawrence banks, to the east and south-east, it gradually swells into ridges, becomes progressively more hilly, and finally assumes

a mountainous character towards Lakes Memphremagog and St. Francis, beyond which it continues to preserve more or less boldness of aspect to the borders of the Chaudière, and the height of land at the Connecticut sources.

* This last is the section of country known by the name of the Eastern Townships, and which properly so called are that great extent of habitable and fertile country contained between the Chambly and Chaudière Rivers in one direction, and between the frontier lines of Maine, Vermont, and New Hampshire, and the Seigniories of the Districts of Montreal, Saint Francis, Three Rivers, and part of Quebec, in the other. This vast territory promises to become at no distant period the richest, the most populous and the most flourishing part of Lower Canada, not only on account of its climate, milder than that of the shores of the St. Lawrence, of the immense extent of excellent and fertile soil which it includes, and of its abundant streams of water, but also because, while bordering on the territory of the United States, it is traversed by the main lines of communication between the two countries, namely, the railroad from Montreal to Richmond, and from Richmond to Portland on the Atlantic, and by that from Richmond to Quebec, forming part of the Grand Trunk line.

The six great counties which the Eastern Townships comprise, Sherbrooke, Stanstead, Shefford, Missisquoi, Drummond, and Megantic, contain, according to Mr. Bouchette's compilation, 4,886,400 acres of land, and their population did not, according to the approximate returns of the population of Lower Canada of 1848, exceed 69,168 souls. In order to arrive at an approximate estimate of the numbers which the Eastern Townships might contain, we will suppose that two-thirds only of the superficial acres, that is 3,257,600 acres, are occupied, omitting the other third as worthless and unproductive; and allow one hundred acres to every settler, the result will be 32,576 landed proprietors. We may therefore conclude, without fear of being charged with exaggeration, that the population of the Eastern Townships may soon reach the number of 243,027 souls, that is to say, a number equal to half the entire population of Lower Canada in 1831. We would have the reader to observe that the computation of 1,628,800

* For the chief portion of this sketch of the townships the author is indebted to the Report of the Committee on the settlement of these townships, published by the House of Assembly.

acres as unproductive is far beyond the mark, inasmuch as the Eastern Townships contain tracts of land considered to be unproductive, but yet very fit in fact for cultivation, and needing nothing to render them valuable but the application of a good system of drainage.

The features of the country which we are describing are in general varied and exceedingly interesting.

There are a considerable number of villages in the inhabited parts of the townships, and each distinguished by its particular kind of beauty. In one, the surrounding landscape charms the eye, in another the buildings are constructed in a varied and capricious style, while of a third the most striking feature is its situation at the foot of a mountain or the border of a lake. Every township in any degree settled has its village; some possess two. In the Township of Ascot are Sherbrooke and Lennoxville; in Shipton, Richmond and Danville; in Grantham, Drummondville; with many others scattered throughout the various townships. The Town of Sherbrooke is a village more considerable than the rest, and yielding in beauty to none. The nearer we approach the frontier the greater the appearance of prosperity, and there the earliest settlements were made.

This extensive territory is abundantly watered by the St. Francis, which has two main springs, namely, Lake St. Francis, situated between the Counties of Megantic and Sherbrooke, and Lake Memphremagog, upon the frontier of Vermont, by the Rivers Nicolet, Bécancour, Chaudière, and by others less considerable. The River Magog, passing through the Town of Sherbrooke, furnishes water power to several cotton, wool, iron, paper, and pail factories. The water power of the Magog, which is considerable, will eventually add greatly to the importance of the Town of Sherbrooke. The River Bécancour might be easily made navigable by means of a cheap canal from the falls in Inverness to Black Lake, a distance of only fifty-one miles. From this point the St. Francis, watering the Townships of Weedon, Dudswell, Westbury, and Ascot, affords a cheap and easy means of communication, which passes through a tract of country a hundred and one miles in length. It opens out to the labors of the agriculturalist, and the enterprise of the merchant, the beautiful valley watered by the Bécancour and the St. Francis, destined to become, one day, one of the richest sections of the Eastern Townships.

Throughout the vast tract of country we are describing we find a great number of minor streams, affording water power which might be turned to profitable account with no great outlay of capital. Here we may remark that the townships are free from the burthens of the Seigniorial Tenure, and we accordingly find mills and factories in all the settled parts of the country. They are therefore destined to become the seat of manufactures, and the abundant water power will be a permanent source of wealth.

Another subdivision of country may be briefly noticed: the Chateauguay and Beauharnois section, including the important Seigniory of Beauharnois, and other seigniories, and supporting a large population. This part lies between the Eastern Townships and the River St. Lawrence, and extends to the boundary line of the Upper Province.

UPPER CANADA.

We now proceed to notice the geographical features of Upper or Western Canada, which will be viewed as divided into three great natural sections, the eastern, central and western. The first containing the triangular territory between the St. Lawrence and the Ottawa. The second, having nearly a square form, extending from Lake Ontario on the south to Lake Nipissing on the north, and stretching from the latter lake to the Ottawa, eastward. The third, comprising an irregular triangular peninsula, enclosed nearly by Lakes Ontario, Erie, St. Clair, and Huron, and the channels by which these are connected.

1st. Within the eastern section are comprised the following counties, viz:

Glengary, Stormont, Dundas, Leeds and Grenville, Prescott, Russell, Lanark, Renfrew, and Carlton.

The Counties of Glengary, Stormont, and Dundas, the old Eastern District, skirt the St. Lawrence, having a row of six townships, viz: Lancaster, Charlottenburg, Cornwall, Osnabruck, Williamsburg, and Matilda, fronting the River St. Lawrence; and six, viz: Lochiel and Kenyon, Roxburgh and Finch, Winchester and Mountain, on the river. The County of Glengary is settled by Highlanders chiefly, the County of Dundas to a considerable extent by Dutch and their descendants. The Counties of Leeds and Grenville, containing on the River St. Lawrence the towns of Prescott and Brockville, and many villages, front on the St.

Lawrence, and run back. The Counties of Prescott and Russell lie between the Ottawa River and the Eastern District. Within these counties are very valuable mineral springs, known as the Caledonia Springs. In the Township of Plantagent also there is a valuable medicinal spring, the waters of which are largely used, being exposed for sale in the chief cities of the Province. The County of Carlton abuts the County of Russell, and following the irregular wanderings of the Ottawa, contains five townships on the river, and five in the rear. The Rideau Canal has much benefitted the lower front townships. This canal is an Imperial work of considerable extent, which makes the Rideau River and Lake navigable, and connects the Ottawa at Bytown with the St. Lawrence at Kingston, a distance of 142 miles. There are 47 locks. It was built for military purposes chiefly. The principal town in this section of country is Bytown, now elevated to the position of a city, known as the City of Ottawa, and containing over 10,000 inhabitants. The farm on which it stands was sold 25 years ago for £80, and is now computed to be worth over £50,000. Above Bytown, at the Chats Rapids, a canal is being constructed by the Government on the north or Lower Canadian side of the river. The Counties of Lanark and Renfrew, of which the principal town is Perth, containing 2500 inhabitants, embrace 27 townships, extending from the County of Leeds to the Ottawa River, and having a range of townships on this river. Beyond the upper portion of Renfrew is a large tract of unsurveyed land, included in the general description of the Ottawa country, and extending to Lake Huron. A railway is in progress, traversing the County of Leeds from the St. Lawrence at Brockville, and extending through Lanark and Renfrew to the Ottawa at Pembroke, opening up a fine country already containing a large population. The front townships of the Counties of Glengary, Stormont, Dundas, Grenville, and Leeds, are also traversed by the Grand Trunk Railway. The eastern division of the Province contains much excellent land and a hardy enterprising people, and is destined to afford support to a much larger population, as it embraces valuable mineral resources, and there are large tracts of land available for settlement.

2nd. The central section of Canada West comprises the Counties of Frontenac, Lennox, Addington, Hastings, Prince Edward, Northumberland, Durham, Peterborough, the four Ridings of

York and Simcoe Counties. This central division comprises a very important section of Canada, and includes a large extent of territory. It is watered by several rivers, such as the Moira, Otonabee, and Trent. The two last are connected with a series of nearly a dozen lakes, commencing with Rice Lake, and ending with the large Lake of Simcoe. The central division is bordered by Lake Ontario, and runs back to the unsurveyed country. The Counties of Frontenac, Lennox and Addington, the most easterly of the three, adjoin the County of Leeds. The City of Kingston is here most advantageously situated at the outlet of Lake Ontario into the St. Lawrence. The large County of Hastings is washed in front by the Bay of Quinté, which is connected with Lake Ontario. The iron works of Marmora, and Belleville, a very rising town, are situated within Hastings. The County of Prince Edward is a large peninsula, separated on the one side from the Counties of Hastings and Lennox by the windings of the Bay of Quinté, and washed on the other by Lake Ontario. The Counties of Northumberland and Durham, commencing at the western extremity of the Bay of Quinté, and washed in the front by Lake Ontario, extend about sixty miles westward along Lake Ontario to the County of York, and are backed by the County of Peterborough. Cobourg is the principal town. Port Hope is also a rising place. The County of Peterborough is bounded to the south-west by Durham, and separated by Rice Lake and the Trent from Northumberland County. The Town of Peterborough on the Otonabee, is a place of rising importance. The old Home District, comprising the four Ridings of York, stretches from Northumberland and Durham westward to the River Credit, towards the termination of Lake Ontario, and extending northerly along the southern and eastern shores of Lake Simcoe. This is an exceedingly fertile section of country, yielding abundant crops of wheat. The City of Toronto is its capital, the most populous city in the Upper Province, advantageously situated on Lake Ontario. A macadamized road, called Yonge Street, upwards of thirty miles in length, was many years ago laid out, and is still in use. A railway has been opened out from Toronto to the Georgian Bay on Lake Huron, terminating at Collingwood Harbour, where a town has sprung up with surprising rapidity. In rear of the Ridings of York lies the extensive County of Simcoe, extending to the southern shores of the Georgian Bay on Lake

Huron, and containing a large population. The Ontario, Simcoe and Huron Railway, above alluded to, will do much to develop the resources of this part of the country. The central section of the Province is an important one, and is destined to contain a very large population.

3rd. We have now to treat, thirdly, of the western section of Upper Canada, which is advancing with great rapidity, is attracting the greater share of the emigration, and is in many respects the garden of Western Canada. Its surface is remarkably level, containing scarcely a hill. Its interior is traversed by several fine rivers, the Welland, Grand River, Thames, and Sydenham. The following counties are included in it, viz: Halton, Wentworth, Lincoln, Welland, Haldimand, Norfolk, Middlesex, Kent, Essex, Huron, Waterloo, and Oxford. Halton and Wentworth are separated from each other by Burlington Bay, which forms the western extremity of Lake Ontario. Hamilton is a city of importance, being the second in Upper Canada, and advancing very rapidly. Lying chiefly eastward from these are Lincoln, Welland and Haldimand, forming a peninsula enclosed on the north by Lake Erie. The Welland Canal is a most important work, connecting Lakes Erie and Ontario. This work is the most remunerative of the great system of Canadian canals. The County of Norfolk lies westward from Haldimand. The extensive County of Middlesex skirts a large bend of Lake Erie, and recedes northwards to the County of Huron. It is watered by the important River Thames, on which is situated the rising town of London, now a city. The Counties of Kent, Lambton, and Essex, are the most south-westerly in the Province. They possess much fine land and a temperate climate. The County of Huron lies between the County of Middlesex and Lake Huron. The Canada Company is a very large proprietor in this county. Settlements are extending very rapidly to this section of country, a new one having been recently formed at the Saugeen, a tract recently acquired by the Provincial Government by treaty from the Indians, and which is represented as possessing many advantages. The County of Waterloo extends north-eastwardly from the eastern extremity of the County of Huron to Owen Sound on the Georgian Bay of Lake Huron. The County of Oxford is entirely inland, being enclosed by the counties above lastly named.

Having thus presented an outline of the geographical character of the Upper Province, for our limits will not permit of greater details, we shall now notice the great River St. Lawrence, and the great Lakes of Ontario, Erie, Superior and Huron, which in fact ought rather to be characterized as inland seas than as lakes.

THE ST. LAWRENCE.

This noble river is the pride of the Canadian people, and the highway down which are poured to the ocean their surplus products. Emerging from Lake Ontario at Kingston, it pursues its course, widening occasionally into expanses of lakes, till it expends its waters, previously swollen near Montreal by the River Ottawa, in the great Gulf of the St. Lawrence. Its extreme course from Lake Ontario is over 600 miles, and its width varies from three-quarters of a mile to twenty-five miles. Its stream between this lake and Montreal is occasionally interrupted by rapids, some of which are too impetuous to admit of vessels ascending them, though they may and do freely descend them. This difficulty has been overcome by the magnificent chain of the St. Lawrence Canals, which are unequalled in the world, and which, with the Welland Canal and the great lakes, afford an inland navigation of 2000 miles, penetrating into the very heart of this great country. The principal tributaries of the St. Lawrence are the Ottawa, St. Maurice, and Saguenay, all which have been previously noticed in that part of this work relating to Lower Canada.

LAKES.

The distinguishing feature of North America is perhaps the number and magnitude of its lakes. Irrespective of many of comparatively inferior extent, there are five great lakes intimately connected with each other, viz: Lakes Superior, Huron, Michigan, Erie, and Ontario, which embrace an area of 100,000 square miles. Lake Superior is the largest inland lake in the world.

These five great lakes are situated within that portion of the Continent of North America which may be described as the basin of the St. Lawrence. The general aspect of the area within which they are comprised is that of a great central plain with successive terraces. The whole fall of the water in this course of 1300 miles is only 370 feet. Lake Superior discharges its waters by the River St. Mary, 39 miles long, into Lake Huron. It is 1750 miles in circuit, with an area of 40,000 square miles. Its borders are bold

and rocky, and contain much mineral wealth, as for instance copper and iron. A ship canal has been constructed on the American side, between Lakes Superior and Huron, at the Sault Ste. Marie, to overcome an interruption to the navigation of a mile and a half in extent. The shores of Lake Superior, except in Michigan and Wisconsin on the south, and of the Hudson's Bay, and of a portion of the territory of the Mining Companies on the north, are covered with the original forest. Lake Huron is 578 feet above the sea. It is 250 miles long, 220 broad, and 900 feet deep, and Lake Michigan is 310 miles long and 90 broad. Both these lakes overflow by the River and Lake St. Clair, and the Detroit River, into Lake Erie. Lake Huron is very irregular in shape, and is divided into two parts by the Manitoulin Islands. The area of the south portion of the lake is about 14,000 square miles. That to the north is divided into two parts known by the names of the Georgian Bay and the North Channel, the former with an area of 6000 and the latter with a surface of 1700 miles, thus making the area of the whole 21,700 square miles. The shores on the south are low, but on the north they are bold, with good harbors. The land on the borders of Lake Huron is generally fertile, though occasionally rocky on the north. The mineral wealth of the country adjoining Lake Huron is believed to be great. Lake Michigan is connected with Lake Huron, of which it is in fact a part, by the Straits Mackinaw. It has a circuit of about 1000 miles, and an area of nearly 17,000 square miles, exclusive of Green Bay, which has an area of 2000 miles. Lake Erie, the fourth of the great lakes, is about 700 miles in circuit, with an area of 11,000 square miles. Its shores are generally low, with little depth of water, like the lake itself. Its commercial position is favorable, being situated in one of the most fertile regions of North America.

Lake Ontario is connected with Lake Erie by the Niagara River, 35 miles long, broken in its course by the Falls of Niagara. Its area is about 7000 square miles. Its shores and bays, particularly the Bay of Quinté, are varied and irregular. It possesses excellent harbors, of which the best are Kingston on the Canadian and Sackett's Harbor on the American side of the lake.

The whole length of the lakes is about 1270 miles, or with the St. Lawrence forming a water course of 2170 miles.

Much valuable information as to the lakes will be found in a lecture by the Rev. Professor Williamson, of Queen's College, Kingston.

The lakes afford profitable fisheries, and the country of the lakes seems formed to be one of the richest agricultural regions in America. The lakes are of the utmost importance as means of internal communication, but become especially so when viewed in connection with the canals and railways, and the communication with the sea-board. Some conception of the great extent of the Colony of Canada, and its importance as a dependency of Britain, may be gathered from the statement of the fact that these great lakes alone contain a greater area than that of all Great Britain.

CHAPTER III.

NATURAL PRODUCTS.

The natural products of Canada are destined to prove to it an almost inexhaustible source of wealth. The products of the forest and the mine, and of the sea and fresh water fisheries, are yearly rising in economic importance, and are keeping pace in value with the extension of the agricultural resources of the Province. We shall, therefore, proceed to notice them in the order stated above. Firstly, the products of

THE FOREST.

These have hitherto been perhaps the source of revenue which has been most productive. Canada has long largely exported white and red pine timber, masts, staves, and deals, to Britain, but of late years a large and steadily increasing trade in sawed lumber has sprung up between Canada and the adjoining United States. In the year 1852 the products of the forest exported during that year were valued at £1,351,713 9s. 7d., and of this large amount the region of the Ottawa furnished a considerable proportion. The timber which is most extensively exported is that of the white pine tree, a species of wood of which Canada possesses inexhaustible quantities. It is easily wrought, comparatively free from knots, and very durable. It is much used for the decks of vessels, and also for their lower masts. It is exported to Britain in the shape of masts, deals, laths, and squared timber. Amongst other timber,

valuable in an economic point of view, may be mentioned red pine, which is largely exported to Britain, and is chiefly obtained from the Ottawa country. Large quantities of "black spruce" are shipped from Quebec, principally for the Irish market. From the balsam, a species of spruce, a valuable gum is obtained, known as "the Canadian balsam," used for medicinal purposes and also as an ingredient in the preparation of several kinds of varnish. Hemlock, one of the spruce tribe, is a very common tree, attaining a large size. Its bark is used as a substitute for oak bark for tanning, and planks made from it are coming into extensive use for plank roads, owing to their being more permanent than pine. The red cedar, for which the Bermudas were long celebrated, is common. The white cedar is also plentiful, and is much used for the construction of fences. Larch of excellent quality is abundant also, and is invaluable for railway ties, &c. Of the hard woods, considerable quantities of elm are exported. The ash is a common tree, and one variety, the black ash, is used for railway purposes, and possesses, I am informed, the uncommon quality of such peculiar fitness for the purposes of the turner that pillars may be turned from the solid wood, which will neither split nor warp. Maple is a very valuable tree. Its wood is a favorite article of fuel, and from its sap, in early spring, large quantities of excellent sugar are made, so that a "sugar bush" is regarded as a useful appendage to a farm. Varieties of the maple, curled and bird-eye, make beautiful furniture. Beech and birch are also plentiful: the wood of the latter tree is well adapted to the purposes of the cabinet maker. That also of the butternut tree makes very excellent furniture, resembling somewhat that made from the black walnut tree. This last tree is abundant in the western portion of Canada West, and affords incontestably the most valuable material for the making of cabinet wares of any of the woods of Canada. The wood is beautifully veined, of a rich dark brown colour, and is quite equal to mahogany. It has only to be introduced into use in Britain, to be valued there, and no doubt will be in demand. On the quality of Canada oak it is useless to enlarge, it being second only to English, and it has long formed a very important article of export. There is a great variety of minor woods to be found among the dense forests of some of the unsettled portions of Canada. In the process of settling, clearings are made, and the wood is thrown into heaps and burned, and from the ashes large

quantities of pot and pearl ashes are manufactured and exported, their price often going a long way towards enabling the settler to meet the first cost of his land. Pot and pearl ashes to the value of £232,004 were exported in 1852.

The forests of Canada are extremely valuable in an economic point of view, affording the materials of a large export trade, and supplying an abundance of fuel.

MINES AND MINERALS.

The mineral resources of Canada are especially valuable, and are being rapidly developed. The Legislature of the Province has, with characteristic liberality, for some years, employed a Geologist of European reputation, W. E. Logan, Esquire, and a staff of competent assistants, in prosecuting a geological survey of the country. In the prosecution of this survey, and otherwise, many important deposits of economic minerals have become known, while others are continually being discovered, to such an extent and of such varied and useful characters as to place it beyond doubt that Canada is possessed of vast mineral wealth. In a treatise such as this it is impossible to enumerate and specify localities. In general terms it may be stated that iron ores are found in great abundance and variety. Magnetic iron ore of excellent quality and great richness, as well as large percentage, is found in large beds in many localities, such as Marmora, South Sherbrooke, Hull, Madoc, &c. At Marmora works have been carried on at much disadvantage, owing to their inland position, but an English Company has been incorporated for working the very valuable and extensive bed of metal at this place, and they intend to overcome the difficulty by constructing a tram-way to connect with the Grand Trunk Railway. At Hull an American firm is engaged in mining the ore, for the purpose of transport to Pittsburgh, Pennsylvania. Specular iron ore is found on Lake Huron, and in the township of McNab in Upper Canada, where there is a large deposit. Bog ore is found in a great number of localities, such as Middleton, West Gwillimbury, Eardly, Marsh, Hull, Templeton, St. Maurice Forges, Stanbridge, &c. At the St. Maurice Forges smelting works have been carried on successfully for upwards of a century, the iron produced being singularly excellent in quality. The stoves produced at St. Maurice from this material enjoy a high local reputation. In the vicinity a new work has recently been erected, and is in operation.

Titaniferous ore is found in abundance in the Eastern Townships of Lower Canada, and in other localities. Sulphuret of zinc has been found on Lake Superior, and sulphuret of lead in Fitzroy, Bedford, and Bastard, and also in the County of Gaspé.

Copper.—Sulphurets of copper of various characters, and native copper, (in small quantities,) are found in abundance on Lakes Superior and Huron. On Lake Huron the Montreal Mining Company have been engaged for some years in carrying on mining operations at the Bruce Mines, and have exported considerable quantities of crushed ore of good quality. Owing to the great distance, and the cost of conveyance, their success has been varied and uncertain, though they are possessed of a valuable mine. Sulphuret of copper has also been met with in the Eastern Townships of Lower Canada, at Upton, Acton, and Inverness.

Silver.—Native silver has been met with at Prince's Location, Lake Superior, and elsewhere in that region, which, however, has not yet received that full exploration which it merits.

Gold.—There is a large auriferous tract of country in Canada, though, in the opinion of the Provincial Geologist, it will not be found in sufficient quantities to repay any but skilled laborers. In the valley of the Chaudière there are many indications of the existence of gold, and in fact, in the opinion of Mr. Logan, the gold region covers a tract of 3000 miles, embracing the mountain ranges which are but a continuation of the Rocky Mountains. To a country possessed of so many natural advantages, and so many elements of material prosperity as Canada, it is not, in the opinion of judicious men, desirable that gold should be found in such quantities as to create a rush to the diggings, and thus to interfere with the pursuits of legitimate industry, and the development of the less attractive but perhaps more permanently enduring sources of wealth.

I now notice, adopting a classification which was carefully framed under scientific auspices, for the purposes of the Canadian effort at representation in the Great Exhibition, *the chemical materials, being such as require peculiar chemical treatment to fit them for use;* and without specifying localities, mention, as having been already discovered in Canada: *uranium*, for the purposes of glass staining and porcelain painting, &c.; *chromium* and *cobalt*, used for the same purposes; *manganese bog*, for bleaching and decolorizing; *iron pyrites*, for manufacture of copperas and sulphur;

dolomite, containing 45 per cent. of carbonate of magnesia, for the manufacture of epsom salts and the magnesia of commerce; and *magnesite*, containing 83 per cent. of carbonate of magnesia.

Passing on to *stone paints* as a general head, I notice that *sulphate of barytes*, largely used in mixing with white lead and also in the manufacture of Dutch white, is found in several localities. *Iron ochre*, for the manufacture of yellow ochre and Spanish brown, and Talcose slate, adapted to the making of yellow ochre and French white, are found in various localities. *Soapstone* is abundantly found, and *ferruginous clay* is also met with. *Ochre* is being manufactured near Three Rivers, by an American firm, for transport to New York.

Lithographic stone of good quality is found in the Township of Marmora and also in Rama.

Among materials applicable to jewellery and ornamental purposes are found *agates*, *jasper*, *labradorite*, *sunstone*, *hyacinths*, *amethysts*, *oriental rubies*, *ribboned chert* (for cameos,) and *jet*.

Materials for *glass-making* are to be obtained, viz: white quartz sandstone, for ordinary purposes; and pitchstone, basalt, and allied rocks, for black glass. Among *refracting materials* have been discovered *soapstone*, *asbestus*, *sandstone* and *plumbago*. In the list of *manures* are included *phosphate* of *lime*, *gypsum*, and *shell marl*.

Next, among *grinding* and *polishing materials* are found granitic and syenitic boulders, derived from the granitic or gneissoid rocks, and adapted for millstones, and silicious conglomerate, granular and corneous quartz rock, granite and pseudo-granite. Sandstones suitable for grindstones, though not of the very best quality, are also found among the Potsdam sandstone, and also in some portions of the Gaspé sandstone beds. Materials applicable for the making of whetstones and hones are freely found. Canadian tripoli, a silicious infusorial deposit, is found, used for polishing.

Materials for paving and *tiling* are abundant. Quarries of *roofing slates* have been opened and manufactured at Kingsey and Shipton, and have been found in Halifax and Frampton. The slate from the Kingsey works is likely to come into extensive use, they being, as are also the Shipton works, easy of access to the City of Montreal by railway. *Flag stones* are found in very great numbers. There is no lack of *materials suitable for building purposes*, and in great variety, viz: granite of superior quality,

white and durable pseudo-granite, sandstone, yellowish white calcareous sandstone and limestone. The latter material is that generally in use in the City of Montreal, and being a compact dark stone, imparts a peculiarly substantial appearance to the buildings and the whole city. Common lime is largely found, and material applicable to the making of hydraulic lime is also to be obtained. *Clay*, for the manufacture of red bricks, white bricks, tiles, and common pottery, is abundant. Owing to the want of stone at accessible distances, the buildings in the City of Toronto are chiefly constructed of white bricks, of superior excellence, made from the blue clay found in the vicinity. The bricks are compact and substantial, while the whiteness of the material gives an air of graceful elegance to the structures for which they are used. *Marble* of various qualities is found in many localities, and of varied character, viz: white, black, brown, grey, and mottled, variegated white, green, and verd antique. *Serpentine*, in many parts, suitable for ornamental purposes, is found in a range of 135 miles, running through the Eastern Townships, and in another range of 10 miles running through Leeds. *Combustible materials.* As coal has not yet been discovered in Canada, and as from it s geological formation it is unlikely to comprehend within its limits any portion of the coal measures, though in the neighbouring Province of Nova Scotia it is found fortunately in immense fields, it is of consequence that peat is very abundant and may prove to some extent a profitable article of consumption for fuel. It is now being manufactured in one locality in the vicinity of Montreal, and is offered for sale in that city. *Petroleum*, *naphtha* and *asphalt* are also found.

In closing this enumeration of the economic minerals and deposits of Canada, it may be remarked that even from this partial summary it is apparent that when the population of the country becomes more dense, and when increased attention is paid to the development of the mineral wealth of the province, and its practical application, Canada will be found producing largely, and affording occupation, and the sources of respectable livelihood, to a large population engaged in the working of the mines and minerals which are so abundantly placed by the hands of Providence within its limits.

We next, in the order we have defined, treat of

THE FISHERIES.

The produce of the fisheries is annually increasing. From the Gulf of St. Lawrence are obtained herrings of excellent quality, and in large quantities. Salmon are also caught, and large quantities are cured. Codfish and mackarel are also prepared for market. The trade in these leading articles might be indefinitely increased, but is already rapidly advancing. The value of these products exported from the gulf and the lakes was in 1850 only £36,521, but it amounted in 1852 to £74,462. This is in addition to and exclusively of the home consumption. These fisheries are carried on in Gaspé, on the north side of the Bay of Chaleurs, and on the coast of Labrador and the Magdalen Islands. The export from these latter islands, consisting exclusively of codfish, herrings and mackarel, was in 1852 £11,096. In addition to the regular fisheries above mentioned, along both shores of the St. Lawrence below Quebec, salmon and herring fisheries are carried on by the resident proprietors in a primitive manner, by long walls of wicker-work terminating in a circle, into which, as the tides recedes, the fish are carried and detained. In this way the *catch* is often very large, and the herrings thus caught are fully equal to the celebrated Loch Fine. In addition to these fish, at certain seasons immense quantities of a delicate fish, popularly known as sardines, are taken in the weirs. The writer has known as many as 54 barrels taken in a weir in a single *catch*, and is firmly persuaded the trade in these might be made a profitable one.

The fisheries of the Gulf of St. Lawrence are thus spoken of in a paper prepared by Mr. Bouchette, and published by the House of Assembly in 1852:

"Rushing periodically, in certain seasons, from the Atlantic, whether by the passage of Canso or by the entrance of the gulf, between Cape Ray and Cape Lawrence, the cod, herring, haddock, mackarel, and the various gregarious finny tribes, in immense shoals, spread along the vast extent of coast that is presented by the gulf shores of Cape Breton, Nova Scotia, New-Brunswick, Gaspé, the north coast of the St. Lawrence, and Labrador, to the Straits of Belle Isle, then along the western coast of Newfoundland, to Cape Ray, presenting upwards of 2000 miles of in-shore fisheries, besides the numerous rivers and streams which are

ascended for miles by salmon, as well as a quantity of fresh water fish, which form a very productive branch of the fisheries of these Provinces."

In addition to the deep sea fisheries should be mentioned the seal fishery, which is prosecuted with considerable success by the inhabitants of the Magdalens, and has been found, from the value of the skin and oil, to supply a very productive staple article of export.

Another branch of the fisheries is that of the white porpoise fishery. These fish are pursued for the sake of the oil they afford, and of late years it has been discovered that their skins are capable of being manufactured into very valuable leather.

But in the fisheries of the great fresh water lakes, Canada is possessed of no inconsiderable resource. The trade is comparatively a new one. White fish, lake trout, and sturgeon, of great size, abound in Lake Superior and Huron. White fish are also caught in large quantities in Lakes Erie and Ontario. The export from Lake Erie alone in 1851 was 3590 barrels, of the value of twenty-five shillings each.

The fisheries are carried on chiefly on the south-west of Prince Edward County, on Lake Ontario, and on Lake Huron, and in 1852 produced 11,884 barrels, principally of white fish and salmon-trout. The waters of Lakes Huron and Superior are teeming with life, and on the north shore of Lake Superior alone 30,000 barrels might be yearly put up for market.

As an instance of the way in which a trade springs up it may be mentioned that a small fish, the tom-cod, is caught with hook and line along the shores of the St. Lawrence at Rimouski and at Kacouna in summer. In winter it comes up the stream as high as the St. Maurice, Three Rivers, and is there caught through holes cut in the ice, with nets, in large quantities. During the present winter it is stated by a local paper that 20,000 bushels have been sold in the Montreal market alone, realizing the sum of £2500 as the produce of the Three Rivers fishery alone, exclusive of local consumption.

AGRICULTURAL PRODUCE.

By far the greater extent of the Canadas is admirably adapted for agricultural pursuits, as the export of agricultural products for the years 1852 and 1853 amply proves, the export of the former

year being £1,214,214 3s. 10d., and of the latter £1,995,094 15s. 9d.; while the total growth of wheat in 1851, in all Canada, is calculated by the Board of Registration and Statistics as having been 15,162,662 bushels. Of this quantity, 4,276,871 bushels were exported in that year as wheat and flour. The home consumption is nearly 5½ bushels per individual. In the United States, during the last ten years, the growth of wheat has increased 48 per cent., while during the same period in all Canada it has increased upwards of 400 per cent. The average produce of wheat per acre in Upper Canada is 16$\frac{14}{60}$ per acre, and in Lower Canada 7$\frac{3}{60}$. In the latter Province, during the last ten years, the growth of fall wheat has been either wholly abandoned or is only sown intermittingly, owing to the ravages of the fly, but it is believed its general cultivation may be eventually resumed. Black sea wheat is the variety now chiefly planted in Lower Canada, and is sown in the spring. Canada exports large quantities of butter of good quality. The amount of butter produced in the Upper Provinces has in three years increased 372 per cent., and that of cheese 233 per cent.; but the returns are deficient as to Lower Canada. The soil of Canada is adapted and the climate favorable to the growth of wheat, peas, rye, barley, oats, buckwheat, hay, hemp, and flax grass seed, Indian corn, and potatoes; and of all these large quantities are raised. Upper Canada is best adapted for wheat, and produces it most largely, but Lower Canada grows no inconsiderable quantity, and produces also large quantities of peas, oats, and the coarser grains generally. Its soil is also well adapted for the growth of root crops, which should be more extensively grown, in view of the importance of fodder, which is rendered more valuable in consequence of the length of the winter. Flax and hemp might also be grown with great advantage to the country. Lower Canada is especially suited for their growth, and these articles might prove a great source of industrial wealth, and give employment to a thrifty population. Hemp and flax grow with the greatest luxuriance. "The fibre of Canadian flax has been ascertained to be of the best description, and the Society for the Encouragement of Arts years ago determined, by actual experiment, that Canadian hemp is equal to that from the Baltic." In view of the former large export of flax to Britain from Russia, and its present interruption, it is most important that its growth should be encouraged in Canada, as the demand in England is greater than the

supply. In 1851 the import into Britain, of flax and hemp, amounted to 2,495,672 cwt. Ireland produces a considerable quantity, but 100,000 tons more fibre are consumed in Britain than is produced there, and this quantity Russia and Northern Europe has supplied to Britain at a cost of $50,000,000 or £12,500,000. This, then, is a favorable juncture for Canada to enter upon a new and profitable branch of industry. In the Chapter on Statistics fuller details will be found as to the agricultural products of Canada, and a contrast will there be instituted between the productiveness of the Province and that of some of the adjoining States of the American Union. From the great diversity of climate, the goodness of the soil, and its adaptation to the growth of the cereals, Canada cannot fail to continue to be, as it already is, a large exporter of wheat and other grains, and take high rank as an agricultural country.

CHAPTER IV.

MANUFACTURES.

The manufactures of the Province are yet in their infancy, but are annually increasing in variety and extent, and rising in importance. Lower Canada especially is admirably adapted for the extension of manufactures. The long winter, in which comparatively few of the departments of out-door agricultural labour can be engaged in, and the peculiarly appropriate character of the industrious French Canadians of the interior, adapting them for such occupations, render it very desirable that the facilities afforded by the abundant water powers, and comparative cheapness and plentifulness of labour, capable of becoming skilled, should to a large extent be taken advantage of. We shall then see from one of its fertile valleys to another a chain of thronging factories extended; and the clang of the heavy hammer, and the jar of the machinery, and the busy hum of human industry will mingle with and be heard high above the rapid splash and echoing fall of the many streams which, now lavish of power, invite the labour of the artisan. The clog of the Seignorial Tenure in Lower Canada has to some extent impeded the progress of this branch of industry, but as it may be now regarded among the things that were, I venture to predict that the day is not far dis-

tant when Canada—and Lower Canada especially—will be largely engaged in various manufactures, and add important contibutions in this way to the common wealth. Yet, even in their embryo state, many of the manufactures of the country are worthy of special notice. New branches of productive industry are continually arising, and new manufactures are carried on. For instance, the banks of the Lachine Canal at Montreal are being clustered with busy manufactories. A large sugar refinery has been erected. An India rubber manufactory is in active operation. Paint mills, axe factories, machine shops, nail and spike factories are carried on. The railway system has created large railway car and locomotive works. Marine, fire and other engine works are also carried on, as are also carding and fulling mills, and cotton and woollen factories. Among the other nascent manufactories of Lower as well as Upper Canada may be mentioned tanneries, founderies, pail factories, oatmeal and grist mills, lathe and planing mills, potteries, asheries, shingle factories, slate works, ochre works, soap and candle works, starch factories, distilleries, cooperages, brick yards, rope walks, thrashing mill factories, nail factories, chair factories, breweries, ship yards, barley mills, paper mills, saleratus works, match and rake factories. Ship-building is a very important trade in and about the City of Quebec, and gives employment to a very large number of hands; while the colonial built vessels, for build and strength, have acquired a high reputation. In the year 1843 there were built at Quebec 48 vessels, tonnage 13,785, while in 1853 there were 76 vessels, tonnage 51,637, showing a large and decided increase. The average annual value of vessels built at Quebec has been estimated at £500,000. Latterly an enterprising ship-builder has built several ships on Lake Ontario, and causing them to descend the St. Lawrence, freighted them from Quebec for Liverpool, and sold them there to advantage. Another very large branch of Lower Canadian manufactures is that of deals, from the north shore of the Ottawa between Montreal and Bytown, and from the valley of the St. Maurice, and the Saguenay country. A new branch of the timber trade has been established during the present year, in the transport, from the line of the St. Lawrence and Atlantic Railway, of shooks or boxes for sugar, for exportation to Cuba, one enterprising firm alone shipping to the value of £25,000 currency.

Passing on, with this brief and imperfect sketch, we find that the two great leading manufactures are those of timber, square and sawed, and of flour, these forming the great staples. As has been elsewhere stated, the manufacture of the bog-iron ore of Canada has been carried on profitably and successfully at Three Rivers for 100 years, and it is trusted that, before long, the vast mineral wealth which is contained in the immense deposits of magnetic and other iron ores of Canada will be turned to account.

In addition to the manufactories mentioned as in operation in Lower Canada may be named, as being in existence in Upper Canada, besides those enumerated above, also scythe and rake factories, large and extensive woollen cloth and blanket works, stone ware factories, mustard mills, plaster mills, sash factories, spade and shovel works, whip, broom, and cigar, and vinegar factories. Among the minor manufactures perhaps the tanneries may be mentioned as the most important and extensive: none of these have, however, yet attained to the position and extent of similar works in older countries, and some of them are humble enough in their character; still the day of small things is not to be despised, and in these indications of industrial energy and activity can be foreseen those vast future workshops for which Canada may be the site, when its population shall have increased to but a tithe of the numbers, which it can sustain without overcrowding.

CHAPTER V.

COMMERCE.

The commerce of Canada is being extended and developed with giant strides. It has passed the period of infancy, and attained a magnitude which may perhaps at first view seem disproportioned to the youth of the country; for it is to be borne in mind, that in 1782, what now constitutes the fertile, wealthy and populous Western Canada, with a population of over a million, was a wilderness.

The merchants of Canada are energetic and enterprising. The Legislature of the Province is patriotic and attentive to the commercial and industrial interests, and the magnificent channels of inland communication which Providence has bestowed upon the country, are taken advantage of to the fullest extent, and assisted

by art, where nature has interposed obstructions. In the course of this chapter it is designed to refer to the imports and exports of the Province, indicating the various sources and branches of the trade of Canada, and explaining the advantages which the Canadian route to the great West of North America, holds out to the emigrant in preference to other routes, by means of its river, canal, and lake navigation, and the great system of railways now in progress.

The total value of the imports into Canada in the year 1853 was £7,995,359 1s. 1d. Of this amount, £4,622,280 3s. 10d. was imported from Britain, £158,164 19s. 7d. from the British North American Colonies, and £2,945,556 17s. 0d. from the United States, the residue from other sources. For the same year the exports of the Province were £5,950,325 15s. 4d. currency, of which £2,866,351 19s. 4d. were exported to Great Britain, £2,681,363 15s. 8d. to the United States, £345,116 7s. 11d. to the other North American Colonies, and £5,045 16s. 11d. to the British West Indies. Of the imports the total amount of goods paying duty was £7,551,381 3s. 0d., of which £4,556,383 15s. 8d. were from Britain, and £2,664,145 11s. 5d. from the United States. In 1852 the exports were £3,826,901 15s. 5d., and the imports £5,071,623 3s. 11d., showing an immense advance in the commerce of 1853 over the previous year, amounting, taking both imports and exports together, to 57 per cent. In 1849 the nett revenue from Customs Duties was £412,737 3s. 9d.; in 1852 it was £705,622 19s. 9d., but in 1853 it was £986,597 16s. 10d. currency.

The following statements will show the nature, variety and extent of the exports of the Province of Canada, and will afford some adequate conception of its position as a colony, and of its great resources, while they may give some indication of the future of the country.

The total value of the exported produce of the mines of Canada was, in 1853, £27,339, of which copper ore furnished £23,020. The total export of the produce of the fisheries was £85,000 13s. 8d. The produce of the forest, which was exported in 1853, is large, there having been exports from that source to the value of £2,355,255 2s. 2d., of which £1,682,125 12s. 1d. found their way to Britain, and £652,534 5s. 4d. to the United States. Of animals and their produce the export was £342,631 7s. 0d. Vege-

table food constituted the second leading export, viz: £1,995,094 15s. 9d., of which £1,219,861 14s. 6d. was exported to the United States, £502,160 4s. 8d. to Britain, and £273,068 16s. 7d. to the other British North American Colonies. The export of manufactures was £35,106 9s. 0d., to which is to be added, for ships built at Quebec during the year, say £620,187 10s. 0d. currency; the total value of exports from sea ports being £3,266,716 2s. 11d., and from inland ports, £2,236,341 7s. 9d. From the seaward ports there were exported from

Quebec	£2,443,457	19	0
Montreal	746,050	8	0
Gaspé	32,667	19	11
New Carlisle	29,942	14	6
Amherst	14,597	1	6

Further, in the year 1853, there arrived at the Port of Quebec 1351 vessels, with a tonnage of 570,738. Of this number 1222 were British, 51 United States, 87 were Norwegian, 27 Prussian, and the residue from other foreign countries, including 5 from Spain. In the same year 1406 vessels departed from this port,—the difference between arrivals and departures being due chiefly to newly built vessels, and to vessels from Montreal, cleared from Quebec, but not reported inwards. In the same year 243 vessels arrived at the inland port of Montreal, at the foot of the canal navigation. The movement of shipping on the inland waters, including coasting and the intercourse by these waters with the United States, was proportionably great, and appears greater by contrast. In the year 1817 the two first Canadian steamers on Lake Ontario were built. In 1818, I learn, there was only one steamer on Lake Erie, and forty sailing vessels above Niagara Falls. Now there are hundreds. The inward tonnage of lake and river steamers in 1853 was 2,175,241 British and 1,102,239 American, in all 3,277,480. In the same year the tonnage inwards of sailing vessels was 544,509, the outward tonnage of steamers was 3,076,509. Of these 2,070,117 were British and 1,006,392 American, and of sailing vessels 571,814. The total inward and outward tonnage being 7,470,312. There were built within the Province, in 1853, 136 sailing vessels, with a tonnage of 57,722.

The following tables, taken from the Provincial returns for 1853, are interesting, as giving a view of the leading articles of con-

sumption, and of surplus production, which contribute to the direct ocean trade *viâ* the St. Lawrence.

SUMMARY STATEMENT of goods imported into Canada from sea, *viâ* the St. Lawrence, showing the value of the principal articles imported during the year 1853:

ARTICLES.	VALUE.		
	£	*s.*	*d.*
Coals	25,333	6	5
Coffee	2,112	1	7
Cordage	26,655	0	0
Fish	47,388	17	2
Fruits	11,072	14	6
Liquors	117,560	9	9
Manufactures—Cottons	925,343	17	6
Furs	30,551	16	9
Glass	29,253	11	0
Iron and Hardware	853,043	5	9
Leather	23,386	16	2
Linen	111,343	4	7
Silk	236,389	8	4
Woollens	939,736	12	6
Molasses	30,125	6	10
Oil	58,825	15	1
Paper	44,366	2	2
Railroad Iron	316,654	19	3
Rice	19,759	14	10
Salt	11,240	19	6
Sugar	172,705	7	7
Spices	13,840	17	11
Tea	14,615	3	1
Tobacco	4,107	17	9
Unenumerated	489,660	16	9
	£4,555,074	2	9
Add goods in transitu from the United States	261,991	0	4
Total value of Imports *viâ* the St. Lawrence	£4,817,065	3	1

STATEMENT showing the value of the principal articles exported from Canada by sea, *viâ* the St. Lawrence, during the year 1853.

ARTICLES.	VALUE.		
	£	*s.*	*d.*
Ashes, Pot and Pearl	131,564	10	0
Butter	37,081	6	2
Copper Ore	8,420	0	0
Fish, dried and pickled	64,428	18	1
Flour	505,368	5	0
Furs and Skins	10,902	15	6
Pork	31,164	0	0
Timber—Ash	3,211	11	3
Bireh	6,152	10	5
Deals	429,208	16	2
Elm	57,022	2	5
Lath	11,329	17	8
Oak	75,498	0	0
Plank and Boards	3,509	14	11
White Pine	627,572	15	0
Red Pine	185,445	11	0
Spars, Masts and Handspikes	21,117	3	3
Staves	133,757	2	1
Wheat	218,886	13	6
Peas	37,274	12	0
Other articles	670,044	14	7
Total Exports by sea *viâ* St. Lawrence	£3,268,960	19	2

Recapitulation.

	£	s.	d.
Total Imports	4,554,074	2	9
Goods in transitu for United States	261,991	0	4
Exports	3,268,960	19	2
Value of ships built at Quebec	620,187	10	0
Total value of Imports and Exports *viâ* St. Lawrence	£8,706,213	12	3

TRADE WITH THE UNITED STATES.

The trade between the Canadas and the adjoining United States is very large, and will be immensely stimulated by the Reciprocity Treaty, arranged and concluded at Washington in July, 1854, after long and protracted negotiations, conducted by Mr. Crampton, the British Minister, and others, and urged on at the instance chiefly of the Canadian Executive. The Earl of Elgin and Kincardine, late Governor General of British North America, as a special representative of the British Government, concluded the final details of the Treaty, which was signed at Washington on the 5th day of June, 1854.

The following table, extracted from a proposed Report of the Montreal Board of Trade, drawn up by an energetic merchant, will illustrate the growth of the trade:

In 1849	the	Exports to the	United	States	were	$1,481,082
	"	Imports from	"	"	"	4,243,724
" 1850	"	Exports to the	"	"	"	4,285,470
	"	Imports from	"	"	"	5,943,821
" 1851	"	Exports to the	"	"	"	4,956,471
	"	Imports from	"	"	"	7,929,140
" 1852	"	Exports to the	"	"	"	4,589,966
	"	Imports from	"	"	"	6,717,960

while in 1853, as I learn from the official returns, the

Exports to the United States were £2,681,363 15s. 8d., or $10,726,455

And the Imports from do. were £2,945,536 17s. 0d., or $11,782,147

which figures contrast singularly with the statement for 1849, and show a surprising extension of trade.

THE RECIPROCITY TREATY.

The Reciprocity Treaty will increase this trade to an incalculable extent. Flour, wheat, butter, and timber, were largely exported in spite of the duty, but they will find their way across the lines with great freedom when this check is removed. It will therefore be well to notice the distinguishing features of this very important treaty, the parties to which were Great Britain and the

United States, but to give effect to which the united action of the Legislatures of Britain, Canada, Nova Scotia, New Brunswick, and of Prince Edward's Island, and of the Congress of the United States of America, were necessary, the parent Government then for the first time recognizing the Colonies as entitled to participate in the giving effect to a Treaty in which their interests were affected.

There remains now but the action of the British Legislature, to give effect to this measure, conceived in a large and liberal spirit, and calculated to produce very great results in its operations, on the commercial relations of the countries interested.*

The Treaty, then, firstly opens up to the Americans the right to use the sea fisheries in the British waters, the salmon and river fisheries being excluded from its operation.

Secondly, it provides that the following articles, the growth and produce of the British Colonies, or of the United States, shall be admitted into each country *free of duty :*

Schedule.

Grain, flour, breadstuffs of all kinds.
Animals of all kinds.
Fresh, smoked and salted meats.
Cotton, wool, seeds, and vegetables.
Undried and dried fruits.
Fish, products of fish, and of all other creatures living in the water.
Poultry, eggs.
Hides, furs, skins, or tails, undressed.
Stone or marble in its crude state.
Slate.
Butter, cheese, tallow, lard, horns, manures, ores of metal of all kinds, coal, pitch, tar, turpentine, ashes.
Timber and lumber of all kinds, round, hewed, sawed, manufactured, in whole or in part.
Firewood, plants, shrubs, trees, felts, and wools, fish, oil, broom corn, and bark, gypsum, ground or unground, hewn or wrought or unwrought burr or grindstones.
Dye stuffs.
Flax, hemp, and tow, unmanufactured.
Unmanufactured tobacco.
Rags.

And thirdly, it throws open the navigation of the St. Lawrence and the canals during the will of the British Government to

* This has been given since this Essay was written, and the Treaty is now in force.

American citizens, while it accords to the British and Canadian people the right to navigate Lake Michigan.

Such are the leading features of this great Treaty, the results and operation of which it is impossible fully to realize.

INTERCOLONIAL TRADE.

Another branch of trade requiring special notice is that between Canada and the sister North American Colonies. It would be very desirable that free trade in its fullest extent should be established between them, as the more their interests are assimilated, and a congeniality of feeling created, the more advantages will their intercourse prove to the whole of these important colonies, whose eventual union is beyond doubt desirable, and in fact is only a matter of time. The total value of the exports to these colonies from Canada was, in 1853, £345,116 7s. 11d., of which the article of flour amounted to the sum of £238,804 7s. 6d. The value of the imports from these colonies in 1853 was £158,164 19s. 7d. The large export of flour was owing to a species of reciprocity existing between the various colonies, by virtue of certain laws of their own Legislatures. In 1853 the value of the articles thus imported into Canada from the other Provinces, free of duty, was £97,647 16s. 4d. The increasing of the trade relations between the Provinces is most desirable, as the coal and fish of the Lower Provinces can be profitably exchanged for flour, wheat, &c. From Halifax, also, large quantities of sugar are shipped to Canada.

The writer has long entertained the firm conviction that the trade between Canada and the Lower Provinces is destined to become a large and extensive one. Nova Scotia especially is so well situated for commanding the trade of the West Indies that the trade between Canada and Halifax, owing to the peculiar geographical position of that port, cannot fail to be much developed within a short period. The breadstuffs and timber of Canada will there find a market for home consumption, and for export to the West Indies. The schooners and other craft of our lakes, instead of lying idle during a long winter, and thus locking up a large capital, may yet, descending the St. Lawrence in the autumn, laden with breadstuffs, find a market for their cargoes in Cuba, Bermuda and Jamaica, and ply during the winter months between the Lower Provinces and the West Indian Islands, and finally

return with a cargo of sugar in spring, to resume their place on the Canadian lakes. It is true that the necessity of being early on the lakes in spring may interfere perhaps to prevent all our craft from engaging in this enterprise; but the owner of several vessels would find the detention of a portion of his fleet for a month in early spring, while the remainder of it was actively engaged in the lake trade, amply compensated by the steady lucrative employment during the long winter of those vessels which had engaged in the intercolonial trade. If such a trade can be created, rendering productive during the whole year the large amount of capital engaged in the lake transit trade, it cannot but prove beneficial to the country, and that apart from the many other incidental advantages which will arise from it. But whether this be found practicable or not, undoubtedly a large trade will be carried on during the summer months between Canada and the several lower ports, in breadstuffs and timber on the one hand, and in sugar, molasses, coal and fish on the other. If proper measures are adopted to free this trade from restrictions, and give it unfettered scope, a goodly fleet of provincial vessels will be found during summer plying between Montreal, Quebec and Halifax, and in winter between Halifax and the West Indian Islands. If such measures be adopted as I have already hinted at,—if the coal and fish of Nova Scotia and the productions of the West Indian Colonies be admitted free of duty, they reciprocating by the free admission of our flour, wheat and timber,—all the Colonies would benefit; a great trade would spring up, the St. Lawrence would assume its legitimate importance in relation to the supply through Canada of the Great West, and the Colonies would be drawn more closely together, and rendered mutually helpful of each other.

It will be for the Canadian people therefore to consider whether their trade with the West Indian Colonies and the Lower Provinces cannot be put on a more favorable footing, and one reciprocally beneficial. A species of Zolverein might thus be created, contributing materially to the strengthening of the various British dependencies, and conducing to the extension of the intercolonial trade.

PASSENGER ROUTES.

Having thus exhibited the results of the commerce of Canada, it will be interesting to notice briefly the advantages of the route through the Canadian waters and territory to the Western States.

Of late years, in addition to the immigration designed for actual settlement, large bodies of Irish, Norwegian, German, and other continental immigrants, have been pursuing their journey to Iowa, Wisconsin, and other Western States of the American Union, through the Canadas,—a branch of trade which is likely to increase to a very great extent. The densely peopled countries of Europe require to be relieved of their surplus population, and as the pressure from overcrowding becomes more severe, the State finds the relief it needs, in the sending forth of swarms of the people to seek a home and a livelihood in America, there to become ultimately fused in the mass of the American people. This exodus, stimulated from time to time by accidental causes, and again depressed, has been proceeding for years; but whether it be in larger or lesser volume, the stream rolls on, and it becomes important to the emigrant that the best route should be selected, and its merits widely proclaimed. This, it is believed and confidently asserted, the Canadian passenger route can be shown to be.

It is not sufficiently known that the sailing distance between Quebec and Liverpool is,—if the straits of Belle Isle be taken, some 400 miles, and if the southern route, 200 miles,—shorter than between Liverpool and New York.

The distances are as follows:

From Quebec to Liverpool, viâ North of Ireland and Straits of Belle Isle,	2680 miles.
" Quebec to Galway, " "	1800 "
" New York to " "	2815 "
" " " to Liverpool,	3073 "

The use of maps on Mercator's projection, and indifferent vessels engaged in the lumber trade, have injured the Canadian route; but with an increased number of the regular trading and passenger vessels, and the lines of Canadian steamers, this prejudice is being dispelled, and justly so. As another advantage of the Canadian route it is important to consider that a third of the distance to Quebec is within the Gulf and River St. Lawrence, where a steamer will sail faster, being less impeded there than by the heavy swells of the Atlantic. Farther, on arriving at Quebec the emigrant is enabled to embark with his family and effects on board a steamer, and with a transfer at Montreal and, in some instances, though not necessarily, at Kingston, pursue his way to Hamilton, where he may take the Great Western Railway to Detroit.

While less subject to imposition, the facilities by the Canada route, for transit, are greater. Transport is speedier, and the cost is less than viâ the States route. Emigrants to the Western States, proceeding viâ New York, have to make three transhipments. If by the Erie Canal they take about 18 days to reach Detroit, whereas, by coming to Quebec, they have but one transhipment, and are taken up in steamers in six days, at much less expense, the passage across the Atlantic being also cheaper.

As regards the transport of flour, and other heavy articles, from the West to the sea-board, it seems evident that the St. Lawrence canal and lake navigation affords such facilities as the Erie Canal cannot successfully compete with, more especially when the Champlain Canal shall have been constructed. Vessels can be laden at Oswego, and descend to Quebec, carrying 3300 barrels of flour, while the burden of the Erie Canal boats is about 700 barrels only, and the transit through this canal very tedious.

OCEAN STEAMERS.

An interesting feature in the trade of Canada is the establishment of three lines of ocean steamers, designed to trade between Montreal and Quebec and Liverpool in summer, and Portland (with which Montreal is connected by the Grand Trunk line of railway) and Liverpool in winter. It may be here remarked that a sum of £19,000 sterling per annum has been appropriated by Act of the Legislature, for seven years, for the purpose of establishing a line of steam vessels between Canada and Liverpool in summer, and Portland and Liverpool in winter. One of these lines belongs to the "Canadian Steam Navigation Company," a British Company which has now the Mail contract, and has been running vessels for a year past. The second Company, the "Montreal Ocean Steamship Company," is a Canadian Company, its chief promoters being the Messrs. Edmonstone, Allan & Company, who are already possessed of a goodly line of sailing traders. It is probable that these two companies may amalgamate. The third is the "Canada Ocean Steamship Company," its principal place of business being in Montreal, but a large portion of its stock being held in Upper Canada. Beyond doubt these lines, evincing much enterprise, will contribute very materially to the development of the trade of the Province.

THE CANALS OF CANADA.

The Welland Canal, by which the Falls of Niagara are avoided, was commenced in an early period of the history of Upper Canada, and forced upon the attention of the public chiefly by the energy and perseverance of the Honorable W. H. Merritt. It is a very important work. Its locks are 150 feet in length of chamber, by a width of 26½ feet, its dimensions being well suited for the class of vessels best adapted to the western lakes, and of which large numbers pass through it, as well of Canadian as American crafts. This canal is 28 miles in length, having about 30 cut-stone locks. It surmounts an elevation between Lakes Ontario and Erie of 330 feet, while the elevation from tide-water to Lake Ontario, being over 200 feet, is overcome by the St. Lawrence Canals, seven in number, of various lengths, from 12 miles to one mile, (but in the aggregate only 41 miles of canal,) having locks 200 feet in length between the gates, and 45 feet in width, with an excavated trunk from 100 to 140 feet wide on the water surface, and a depth of ten feet of water. These canals are chiefly used for ascending the stream, as large steamers drawing seven feet of water, with passengers and mails, leave Kingston, at the foot of Lake Ontario, in the morning, and without passing through a single lock, reach the wharf at Montreal the same day before dark.

A survey of the rapids is now being proceeded with, with the view of removing some obstructions. The time required for the descent of a freight steamer from the head of Lake Ontario to Montreal is 48 hours. The rates of freight range from 7½d., the lowest, to 1s. 3d. per barrel of flour, including tolls. The ruling freight on railway iron from Montreal to Cleveland last year was 12s. 6d. per gross ton, and for the return cargo of flour 30 cents per barrel, tolls included.

The great chain of canals is proposed to be completed by the construction of a ship canal, the Champlain Canal, from the St. Lawrence to Lake Champlain, so as to enable the propellers of Chicago to reach Burlington and Whitehall. The navigation of the Upper Ottawa is also designed to be improved by canals, but the works have only just commenced, a canal being in progress at the Chats.*

* Since this Essay was written, much interest has been awakened towards the subject of the improvement of the Ottawa. The scheme of building a ship canal to afford an outlet for the products of the great West of the Uni-

The Rideau Canal has been noticed elsewhere. The total movement of freight through the Welland Canal in 1853 was 905,516 tons, exclusive of the tonnage of the vessels and passengers; and the tolls were £65,034 5s. 7d. On the St. Lawrence Canals the movement in the same year was 561,601 tons (with the same exclusion,) and the tolls £22,108 7s. 6d. In the year 1853 there passed through the Welland Canal 2743 British sailing vessels and 917 steamers, and 2705 Foreign (American) sailing vessels and 349 steamers. Through the St. Lawrence Canals there passed in the same year 5457 British sailing vessels and 2173 steamers, and 124 foreign sailing vessels and 51 steamers. The total number of vessels of all classes passing through all the canals of Canada in that year was 20,406 with a tonnage of 2,138,654 tons. The gross receipt of tolls from the canals was in 1847, £50,131 16s. 1d., and the nett receipts £41,132 5s. 1d., while in 1853 they were £95,814 5s. 2d. and £79,494 14s. 7d. And, to specify more particularly, the gross revenue from the canal tolls, from each of the canals, in 1853, was as follows:

Welland Canal,	£65,034	5	7
St. Lawrence Canals	24,001	5	1
Chambly Canal	2,126	9	10
Burlington Bay Canal	5,625	16	9
St. Ann's Lock on the Ottawa	919	5	6
	£97,707	2	9
Less tolls refunded passing canals	1,892	17	7
	£95,814	5	2

On the whole, it may safely be asserted that no country in the world is possessed of more important and extensive canals, or a more magnificent system of inland navigation than is Canada. The canals of Canada now afford a large revenue, and accommodate a large trade, but they are yet destined to be the media of

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ted States has been warmly taken up, and the rival merits of a route connecting Lake Huron with Lake Ontario by way of Toronto, and of the route pursued by the early voyageurs by way of the Ottawa are strongly urged. In favor of the latter it is represented that, while in other respects possessing equal advantages, it would open up a wide tract for settlement, and tend to developing the great resources of the Ottawa country. The inhabitants of Chicago have taken a deep interest in the former, and are strongly impressed with the importance and the necessity of a ship canal.

communication for the vast numbers of vessels which the direct ocean trade, the interprovincial trade, and the carrying trade of the Canadas and of the great West will employ, when that trade, as it must eventually do, shall seek its natural outlet through the waters and valley of the St. Lawrence.

I now proceed to treat of those other means of communication which, in a country like Canada, are peculiarly important: I mean its

RAILWAY SYSTEM.

As the navigation of the St. Lawrence is ice-locked during the winter season, the means of speedy communication with the seaboard and with the various parts of the interior is especially important, and this boon the great chain of railways now in progress is designed to afford.

In Canada, thus far, there are three great lines, suggested by and accommodated to strongly marked natural divisions of the country, to which the others will prove tributaries or feeders. It is here worthy of remark that the Canadian Legislature evinces a feeling decidedly adverse to the encouragement of competing lines, under a conviction that in a new and comparatively sparsely settled country like Canada competition between railways cannot but be injurious.

The first of these great lines is the Grand Trunk Railway, which it is proposed to run through Canada from east to west, spanning the St. Lawrence at Montreal by the gigantic Victoria Bridge, now in course of construction.

The second is the Great Western line, traversing one of the most fertile sections of Canada, and now in steady operation, and showing large and increasing returns of traffic.

The third is the Ottawa Valley line, composed of various links, and designed to extend, in the meantime, from the City of Montreal to Pembroke, and eventually to Lake Huron and the Sault Ste. Marie. The distance from Montreal to the Georgian Bay, being by the Ottawa about 400 miles against 1000 by the St. Lawrence. With reference to this line it may be remarked that it is possible that the time may come when this, the most favorable route, will be adopted for the construction of a railway from the Atlantic to the Pacific. The importance of such a line, as a means of shortening the travel to China and the East Indies, and as con-

tributing to the development of the resources of an immense country, is very great, and cannot be over-estimated.

THE GRAND TRUNK RAILWAY.

The Grand Trunk Railway is to some extent a Provincial enterprise, the Province of Canada having a large monied interest in it, and being represented at its board of management by Directors named by the Government. From what has been stated it will be seen that it is a very important work, traversing as it does the frontier of Canada, and extending from Quebec to Western Canada, with a branch to the Atlantic port of Portland in Maine. The Grand Trunk Railway will overcome for Canada the disadvantages of the closing of navigation by winter; while from its peculiar position it will be tapped at convenient intervals by lateral branches, developing the interior, and affording to the main line much traffic. It is a large and comprehensive scheme, one in keeping with the future of this great country. A useful and interesting feature in its plan is the spanning the St. Lawrence at Montreal by what will be the world-famed iron tubular Victoria Bridge, eclipsing by its gigantic dimensions the celebrated Menai Bridge. This bridge is intended to be constructed on twenty-four piers, with spans for navigation, exclusive of the two abutments, whence the tubes are to spring, on either side. The centre span will be 330 feet wide, and each of the other twenty-four spans will be 220 feet wide. The abutments from which the tubes spring will be each of them 242 feet long and 90 feet wide, and from the north shore of the St. Lawrence to the north abutment there will be a solid embankment of 1200 feet in length. The embankment leading from the south shore of the river will be 600 feet. The length of the bridge from abutment to abutment, and its total length from river bank to river bank, will be 10,284 feet, or about fifty yards less than two English miles. The clear distance between the under surface of the centre tube and the average summer level of the river is to be 60 feet, and the height will diminish towards either side with a grade at the rate of one in 130, or 140 feet to the mile.

This gigantic structure is in progress, and when in successful operation will prove a world's wonder. It will add another to the existing sources of attraction which now every summer draw through the Canadian inland waters immense throngs of American

travellers, many of whom return year after year with unflagging interest, to make the tour from the celebrated Falls of Niagara, across the lakes, and down the boiling foaming rapids of the St. Lawrence. The voyage down these rapids is exhilirating and exciting, and is performed daily during the season of navigation by large steamers, as yet without a serious accident.

The Grand Trunk Railway of Canada is to be, when finished, 1112 miles in length, including the former Atlantic and St. Lawrence Railway of Maine, but now known as the "Portland Section of the Grand Trunk Railway." It is a line of peculiar importance to Canada. It will receive a large proportion of the traffic of a region extending 809 miles in one direction, from Portland to Lake Huron, and containing a population of nearly three millions in Canada, Vermont, New Hampshire and Maine. At Portland it connects with the system of railways reaching eastward towards the Province of New Brunswick, as well as southward, by lines already existing, to Boston and New York. From Richmond it runs eastward 100 miles to Quebec, and is intended to be continued from Quebec to Trois Pistoles, 153 miles more, giving access in summer to the former large shipping port, and may at some future day also afford a communication by rail to the Atlantic at Halifax, by Trois Pistoles and Mirimichi, through the Province of New Brunswick. At Montreal it connects by existing lines with Boston and New York as well as with Portland. Passing on along the frontier, and receiving many feeders hereafter to be noticed, it reaches Toronto, and thence traverses the heart of the rich western section of Western or Upper Canada, and must inevitably command a very large traffic. At its terminus at Port Sarnia it will debouch on Lake Huron at a point most favorably situated for the navigation extending through Lakes Huron and Michigan. At Port Sarnia the American roads in course of construction will place it in connection with Iowa, Minnesota and the "great West," as it is termed, of the American Union.

The length of the Grand Trunk Railway at present in operation is 392 miles. It consists of 292 miles from Portland, viâ Richmond, to Montreal, and 100 from the Richmond Junction to Point Levi, opposite Quebec. The Richmond Station cannot fail ere long to become an important place for the interchange of traffic, passenger as well as freight. The contractors are under engagement to have in operation a total of 295 miles in 1855, so that ere

the year closes, the Grand Trunk Railway will probably consist of 687 miles of road in operation.

The author gathers the ensuing information from the recent Annual Report of the Directors of the Grand Trunk Company. with regard to this important Provincial work. The Quebec and Richmond section is in good running order, the distance between Quebec and Montreal, 168 miles, having been accomplished in 5½ hours. The section from Montreal to Brockville is in a very advanced state, and is expected to be open for traffic in November. 1855. The middle section, from Brockville to Belleville, 95 miles, is in active progress. The remaining 113 miles, westward to Toronto, have not hitherto been proceeded with extensively, excepting for 40 miles eastward of Toronto. The works of the western section from Toronto to Stratford, 90 miles, are fast drawing to a close.

Quebec and Trois Pistoles.—The works upon the section to St. Thomas, 40 miles, are generally forward.

Victoria Bridge.—The works upon this important structure are for the present proceeded with, only to a limited extent, owing to the position of the money market.

When the works upon this great line are completed, there will be a continuous railway connection, viâ Canada, between Quebec and Michigan and Maine and Michigan. Detroit will be distant from Portland 872 miles by this route, which is at least 50 miles less than by the way of New York, and as the whole line will be under one connected system of management, passengers or freight will necessarily be carried cheaper and more expeditiously.

THE GREAT WESTERN RAILWAY.

Next comes the Great Western Railway of Canada. This line, carried through to successful operation by surprising local energy, runs from Windsor, on the Canadian side of the Detroit River, opposite the city of that name, to the City of Hamilton, and thence to Niagara Falls, where it connects, by a gigantic railway suspension bridge thrown across the Niagara River about two miles below the falls, with the system of railways in the State of New York, which run from Lake Ontario towards the "tide water" of the Hudson River. The Great Western is in active operation, and is carrying very large numbers of passengers, and

much way and through freight. It passes chiefly through a fertile, populous and wealthy country, and cannot fail to continue a highly remunerative line,—as it now in fact is,—and that to an extent that will be apparent from the ensuing extract from the Annual Report of the Board of Directors, dated 31st August, 1855 :—

"The Directors of the Great Western Railway have much pleasure in laying before the shareholders the accompanying statements of account, for the half-year ending the 31st July, 1855, from which it will be seen that the net revenue from the working of the line, after deducting interest upon the Government loan and the Company's bonds, amounts to....£70,614 18 11
which is equal to a dividend upon the share capital of 9¼ per cent. per annum. But by the Act of Parliament under which the loan from the Provincial Government was obtained, a sinking fund of 3 per cent. per annum upon such loan has to be paid before any dividend is declared. This absorbs a sum, for the half-year, of.....£11,250 0 0

Leaving the available balance.....£59,364 18 11
From which the Directors recommend the payment of a dividend, at the rate of 8 per cent. per annum, on the share capital of £1,429,725, requiring.....£57,189 0 0

And leaving to be carried to the credit of the next half-year, £2,175 18 11

The following comparative statement of the traffic during the eighteen months that the Great Western Railway has been in operation will afford satisfactory evidence of the rapid development of the sources of business from which the Company derives its present prosperous condition, and also some guide as to the probable increase of traffic in future:—

PASSENGER TRAFFIC.

Half Years ending	Local.		Through		Total	
	No.	Am't.	No.	Am't.	No.	Am't.
July 31, 1854	155,191	59,962	55,737	58,724	210,928	118,686
Jan. 31, 1855	191 757	66,928	77,826	76,458	269,583	143,386
July 31, 1855	198,996	66,832	89,435	104,068	288,431	170,901

FREIGHT TRAFFIC.

Six months ending	Local Am't.	Through Am't.	Total Am't.
July 31, 1854.....	19,745	11,674	31,419
Jan. 31, 1855.....	34,306	17,026	51,332
July 31, 1855.....	41,987	36,305	78,292

The prospects of traffic for the future are very encouraging, the present weekly receipts averaging an increase of upwards of £4000 over those of the corresponding period of last year. The average weekly receipts for the half-year ending 31st July, 1855, have amounted to £9585, and for the whole year to £8537."

OTHER RAILWAYS.

A railway, leased by the Great Western Company, called the "Hamilton and Toronto Railway," forty miles in length, will be opened early next year. At Toronto it will connect with the Grand Trunk line by a station common to both, as well as to the "Ontario, Simcoe and Huron Railway." This important line runs for the first fifty miles due north from Toronto to Lake Simcoe, skirting for a few miles the southern shore of the lake, and "Georgian Bay" (the eastern extremity of Lake Huron,) to Collingwood Harbour, the distance of which from Toronto is ninety-six miles. Sixty-four miles of this railway have been opened since the early part of 1853, and the whole ninety-six miles are now completed. This line has already afforded an outlet for a large trade. Retracing our steps to the east, we now speak of those lines, in addition to the Ontario, Simcoe and Huron Railways, which run north and south, and which may be considered as feeders to the great arterial railway system that runs from east to west throughout nearly the entire extent of the Province. Nearest to Montreal, and having its terminus in that city, is the Montreal and Bytown Railway. Bytown, now the City of Ottawa, is the Capital of the Ottawa territory, through which the river of the same name flows, having in its basin 80,000 square miles of forest land, from which, as already fully stated, the chief markets of Europe are supplied with the finest timber in the world. The total length of this line will be 120 miles, of which thirteen miles in the centre are in operation, viz: between Carillon and Grenville, an important section, there being there an interruption otherwise than by canal of the navigation of the Ottawa. This line is the first link of the Ottawa line, and at Bytown it will connect with the line of the Bytown and Pembroke Railway, which is to run from Bytown to Arnprior, a distance of some thirty-five miles, through the County of Carleton, a wealthy and populous county. This line will command a large way traffic in supplies for the lumber trade from Bytown, and also an extensive passenger trade, the number of people employed in the lumber trade constantly ascending and descending from and to Bytown being very great. Arnprior is situated at the mouth of the Madawaska River, and here the Brockville and Ottawa Railway, running from Brockville, where it intersects the Grand Trunk Railway, will strike the Ottawa, connecting with the Arnprior line.

From Arnprior, the Brockville and Ottawa Railway will run parallel with the Ottawa River to the rising village of Pembroke, penetrating the heart of the great Ottawa valley,—a country of which few are in a position to form a competent estimate, and for which this noble line of railway will be the highway to Montreal and the ocean,—while, when extended from Pembroke, a distance of one hundred and eighty miles, to Lake Huron,—as at no distant date it will undoubtedly be,—it must prove one of the great channels of communication to Minnesota and the great West, and from thence downwards to the Atlantic by the St. Lawrence in summer, and in winter viâ the Victoria Bridge to Portland.

At about 25 miles west of Montreal the Grand Trunk Railway crosses the Ottawa by a bridge which is undoubtedly the second work in importance in the entire length of that railway.

Prescott, which will be 112 miles west of Montreal by railway distance, receives the "Bytown and Prescott Railway." It is 50 miles in length, and its course is due north and south. It is opened throughout its entire extent for traffic. The gauge of the railway differs from that of all the other railways of Canada, with the exception of the Montreal and Lachine Railway, which is but 9 miles long. The Provincial gauge is 5 feet 6 inches, whereas the Bytown and Prescott is only 4 feet 8½ inches. This railway connects with the railways leading to Boston, and the means of capitalists of that city have been largely invested in it. At Brockville, 13 miles west of Prescott, the Brockville and Ottawa Railway, already mentioned, falls into the Grand Trunk Railway. The next tributary of the Grand Trunk Railway is at Cobourg, a very flourishing town on Lake Ontario, exactly due north of Rochester. The spirit and energy of Cobourg, in building, with funds raised it may be said exclusively in the town, (the population of which is about 5000,) a railway of 28 miles in length, deserves every commendation. The Cobourg and Peterborough Railway (for so it is called) is already receiving an amount of traffic which its promoters could hardly have anticipated, and will be the means of developing the town and district with rapidity.

Seven miles to the west is Port Hope, another very flourishing town on the banks of Lake Ontario, and the rival of Cobourg in enterprise and industry. It is about to be connected with the "back country" by the "Port Hope and Lindsay Railway," the length of which is 36 miles. The works are in progress, but no immediate time is named for its opening.

Proceeding west, coming to Toronto, the largest city in Upper Canada, and destined to be one of the great centres of trade, we have the "Ontario, Simcoe and Huron Railway," already described, while the most westerly line in Canada open for traffic, having a north and south direction, is a railway built by American influence, and partly by American capital, though chiefly by local funds, the "Buffalo, Brantford and Goderich Railway," which connects Buffalo and the State of New York with Lake Huron at Goderich, by a line of 160 miles in length, and which saves, as compared with the water route by Lake Erie and the Rivers Detroit and St. Clair, fully 400 miles. It also, by its connection with the Great Western Railway at Paris, places Buffalo within eight hours of Detroit, which is less than half the time it requires to go between those two cities on Lake Erie. At Stratford, 90 miles west of Toronto, this railway crosses the Grand Trunk line, and at this point it will divide the traffic flowing from Lakes Huron and Superior, by sending that intended for the United States to Buffalo, and that for Canada and Portland over the Grand Trunk Railway. Eighty miles of this important line, from opposite Buffalo to Paris, are in operation.

By the close of the year 1856, (as an authority, to which the writer acknowledges his indebtedness for much of the foregoing information, assumes,) Canada may fairly calculate on having about 2000 miles of fully equipped railway, which will cost her about £18,000,000 sterling. If, profiting by British experience, rash undertakings be avoided, and the construction of competing lines be hindered and avoided, the extension of the railway system will doubtless prove advantageous to the country at large, by developing its resources and accommodating and stimulating its industry.

CHAPTER VI.

THE SOCIAL INSTITUTIONS OF CANADA.

These will be viewed under the following general heads, viz:—

1st, Municipal Institutions; 2nd, The Municipal Loan Fund, created for the purpose of aiding, by Governmental control and support, undertakings which though to some extent sustained by private enterprise may yet be regarded as for the general im-

provement of the country; 3rd, The facilities afforded by the Legislature for working out certain Social Institutions, such as Mechanics' Institutes and Library Associations, and of organising Companies for the engagement in manufactures, and the construction of roads and harbours, &c.; 4th, The Postal System; 5th, The Legal and Judicial System; 6th, The Banking System of Canada; And, lastly, the Press also may be viewed as a great Social Institution, widely pervading all classes of society, and exercising a weighty influence over the mind of Canada.

I. THE MUNICIPAL SYSTEM.

The municipal system of Upper Canada is comprehensive and efficient. It is adapted, in a very high degree, to the wants of the country, is wrought out with fidelity, and is proving highly serviceable, by teaching the people the habit of self-government, and by familiarizing them with the routine of business, localizing the system of legislation, and training up everywhere men for the various positions, in private and public life, to which industry energy and ability may elevate them. A somewhat similar system prevails in Lower Canada, but as a Bill is now before Parliament, supported by the Executive, to assimilate the features of the Lower Canadian system to those of Upper Canada, it will be unnecessary here to dwell upon it. The Upper Canadian system is a comprehensive one, having been adapted and improved from time to time, as circumstances suggested necessary changes. Originally, it embraced only the then districts which were governed locally by District Councils. Tested by actual experience, the system met approval, and the present system was introduced, and gives general satisfaction.

Each county or union of counties (counties, weak in population being clustered together, till they gain strength, and are then separated into distinct divisions,) is presided over by a County Council.

A county is composed of townships, whose internal affairs are regulated by Township Councils, while each county is governed, as to its local matters, by a County Council consisting of the Town Reeves and Deputy Reeves of the several townships, villages and towns in each county. The Reeves are the heads of the Township Councils, each township being divided into rural wards, and its local affairs managed by a Council of five, elected by the freeholders of the wards. Every township having 100 resident free-

holders is a corporate body electing a Reeve; when possessed of 500 freeholders it has a right to name a Deputy Reeve, who, with its Reeve, or Municipal Head, is entitled to a seat in the County Council. The elections are held annually. Each Township Council has power to erect a Town Hall; to purchase the necessary property for Common Schools, and to provide for their establishment and support; to establish pounds; to appoint fence viewers, overseers of highways; to construct drains, water courses, and, under certain restrictions, highways; to regulate inns; to grant permission to companies to proceed with roads, and to take stock in them; to enforce the performance of statute labour; to borrow monies for township purposes, to raise by way of tax the monies required for such purposes; with other powers defined and expressed by Statute.

The County Council, composed of the Reeves and Deputy-Reeves, is presided over by a Warden elected annually.

They are charged with the keeping up of the Court House, Gaol, and Shire-Hall, raising the necessary funds by rate on the county. All roads and bridges between different townships are under the exclusive control of the County Council. They have power to purchase property for county purposes, to erect Court Houses, Gaols, Houses of Correction, Houses of Industry, and other buildings; to purchase necessary property for Grammar School purposes, to make such provision in their aid as they deem necessary; to provide permanently for the support of such pupils in attendance at the University as may compete from the Grammar Schools for exhibitions therein; to settle the remuneration of all county officers; to regulate ferries; to construct and repair roads, lying within two or more townships; to regulate driving over bridges; to grant monies by loan or otherwise in aid of county works; to take stock in Road Companies; to raise money by tax for county works, &c., &c.

The Council have power to set apart into police villages such hamlets as are not in population sufficient to become incorporated villages; and such villages are governed by a Board of Police. Villages having a population of over 1000 become, on compliance with certain formalities, incorporated villages, having a Council of five to regulate their internal matters, roads, streets, harbours markets, prevention of fires, &c.

So soon as a village attains, by the Census, a population of 3000 inhabitants, it may be erected into a town, governed as to local matters by a Mayor and Town Council, and, as well as the incorporated villages, represented in the County Council by the Reeve and Deputy Reeve.

On a town attaining a population of over 10,000 inhabitants it may be erected into a city, having a county, as it were, within itself, and being governed by a Mayor, Aldermen and Council, in local matters.

The head of each Corporation is, *ex officio*, a Justice of the Peace. Collectors are appointed by the counties, and assessors rolls are kept. Auditors of accounts are also appointed. The By-laws of such Councils are subject to revision by the Court of Queen's Bench.

On review of this brief summary it is evident that this great system is a most advantageous and useful one, and while its beneficial effects are already felt, it cannot fail to conduce materially to developing the energies of the people, fostering self-reliance, creating a respect for the general Government, and promoting the improvement of the country.

As connected immediately with this, may be mentioned

II. THE MUNICIPAL LOAN FUND.

Constituted under Acts of the Provincial Legislature, this important fund is under the management of the Executive Government, and is designed to aid in the construction of railways, public roads, and gas and water works. The amount of the fund is limited to £3,000,000 in all,—one-half for each section of the Province. When it is decided by a Municipality to aid such a work by taking stock or lending money on mortgage to the Company, a By-law must be introduced into and passed by the Council of the Municipality therefor, which is then submitted to a direct vote of the freeholders. If the vote be in the affirmative the Council ratify it, and if the Executive Government of the Province sanction it, on its being submitted to them, the By-law becomes operative and valid, no antecedent formalities being questionable; and Debentures are then issued for the Municipality, payable by the Province of Canada out of the Municipal Loan Fund. This fund is managed by the Receiver General; and the Municipalities are bound to pay to the Receiver General, and provide

by assessment on all the rateable property within their bounds, 6 per cent. interest, and 2 per cent. per annum to be applied towards a sinking fund, designed to extinguish, at the expiration of the term of the Debentures, the municipal debt. Protected by so many safeguards, the fund is based on a sound principle, protecting the interests of the bond-holders, and aiding legitimate undertakings, with the sanction and control of the Provincial Executive.

III. THE PRACTICAL LEGISLATION OF CANADA.

As a whole the Legislation of Canada is believed to be of a very comprehensive, practical character, and well fitted to aid in developing to the fullest extent the resources of this growing country. Acts of the Legislature permit the incorporation of companies for the formation and construction of highways, plank and gravel roads, harbours, bridges, piers and wharves, slides and dams, by any number of persons not less than five, on subscribing for such an amount of stock in such companies as may be prescribed. Freeholders, on opposing the construction of a road, may have the question referred to the decision of the Municipal Council. These Acts are beneficial in their operation, and the inhabitants of Upper Canada are freely taking advantage of them, and opening up communications in all directions. The number of plank and macadamized roads thus constructed is now very large.

Acts of the Legislature also authorize the formation of companies for mining, manufacturing and mechanical purposes, defining and restricting their rights, limiting under certain provisions the liability of stockholders, and affording protection to the public. A very useful measure is the Act which authorizes the formation of partnerships, with limited liability, composed of general and special partners, the one contributing money and services, and risking all their substance, the other risking only a fixed sum, and precluded from active part in the concern, or ostensible connection with it. This Act affords due facilities for the legitimate extension of business, and the safe employment of capital, while it efficiently protects the public by its carefully digested provisions. In a similar manner, Mechanics' Institutes and Library Associations can be formed into quasi-corporations, and most of them are encouraged by the grant of £50 per annum each from the public exchequer.

The formation of Town and Township Libraries, to which the public may have access, is also provided for.

The security of titles is provided for in both Upper and Lower Canada, by carefully framed systems of registration, enforced by privileges accorded in certain cases to priority of registration. The public security is provided for by police regulations, by the maintenance of Gaols and of the Provincial Penitentiary, the latter being a large and commodious structure, in which the convicts are kept at hard labour, at various trades, which they there may acquire.

CHARITABLE AND OTHER INSTITUTIONS.

Amongst Institutions having in view the amelioration of the social condition of the people, in various phases, may be mentioned the Toronto General Hospital, the Montreal General Hospital, the Kingston General Hospital, the Hôtel-Dieu Hospital at Montreal, the Marine Hospital at Quebec, for the reception of sailors and immigrants, the Hotel-Dieu of Quebec, the Provincial Lunatic Asylum at Toronto, of which the building is designed to accommodate 250 patients, and the Beauport Lunatic Asylum near Quebec. For both Upper and Lower Canada General Agricultural Associations are established, and hold annual Agricultural and Industrial Fairs or Exhibitions. In the counties also local societies are established, and the Bureau of Agriculture, a department of Government, is the head of the whole system. Observatories are maintained at Toronto for the purpose of making and chronicling meteorological, observations, and at Quebec for marine purposes.

IV. THE POSTAL SYSTEM.

The postal system is in effective operation, and the number of Post Offices and the extent of Mail service has been largely extended since the department was transferred to the sole control of the Province, in 1851. Previous to that time, varying and arbitrary rates of postage were in force, but after its transference a uniform rate of 3d. per ounce was introduced with excellent effect, the previous average rate having been 9d. per ounce. Yet with this great reduction, such was the expansion of business, and the extension of correspondence, that there was but a deficit of £5000 in the first year's operations as compared with the previous year; and it is now confidently expected that the rate may yet be reduced to 1d. per ounce, with safety and benefit.

In April, 1851, there were 601 Post Offices, and the number of miles of established post rout was 7595, over which the annual transportation of the mails was 2,847,000 miles, and the gross revenue £93,802. Under the new system the gross receipts of the fiscal year ending April, 1852, with the immense reduction of postage, reached the gratifying sum of £71,788 18s. 5d. currency, while the gross receipts for postage for 1853 were estimated to be £81,000 currency. In the week ending 3rd of April, 1852, there passed through the Post Office 86,051 letters and 101,000 newspapers. In the previous year, in a similar week, the numbers were, letters 41,000, papers 90,000. * During the first year of provincial control, 243 new Post Offices were opened and 443,360 miles of mail transportation added. By arrangement with the United States, letters go from Canada to any part of the Union, and *vice versa*, for 6d. currency, except to California and Oregon, when the rate, the distance being over 3000 miles, is 9d. currency. Each country retains the postage it collects. A Canadian Mail for transport by the line of Canadian Ocean Steamers has been organized, the postal rate being 6d. sterling. The rate per the Cunard Steamers is 10d. currency. Postage stamps are issued of various denominations. A letter registration system has long been in operation, and it is still maintained and extended, but to it has been added the money order system, found so effective in Britain. The total expenditure of the department in 1852 for mail service was £41,315 14s. 8d. currency. The last two years have witnessed a continuous extension of the postal system, the correspondence steadily increasing; but the year 1852 has in the foregoing remarks been selected for the purpose of exhibiting the immediate and spontaneous effects of cheap postage, upon its introduction, under the auspices of the first Canadian Postmaster Geneneral, the Hon. James Morris.

V. THE LEGAL AND JUDICIAL SYSTEM.

UPPER CANADA.

The legal and judicial systems of the two Canadas are dissimilar. In Upper Canada the Court of lowest jurisdiction is the Division Court, having jurisdiction to £25, and presided over by the

* Since this Essay was written, all Provincial newspapers have been exempted from Postage within the Province.

County Judge, his decision being final, and the Sessions of the Court being held in the various divisions of the county or counties which are set apart by the Judge to meet local convenience. The County Court comes next, with a jurisdiction up to £100, and presided over by a County Judge, who must be a Barrister of five years standing, and is appointed by the Crown. Their salaries range from £300 to £500 per annum. Next are the Courts of Queen's Bench and Common Pleas, sitting in term, at Toronto, and holding semi-annual Courts of Assize and Nisi Prius, as in England, throughout the various Circuits of the Province. The Judges of these Courts are men of high standing, the Chief Justice of the Court of Queen's Bench having recently, as a reward for long services as a Legislator and a Judge, been created a Baronet.

The Court of Chancery is presided over by a Chancellor and two Vice-Chancellors; and its business being transacted in accordance with certain summary forms, it is more expeditious than its parent in Britain.

The Court of Appeals, composed of the Judges of the Courts of Queen's Bench, Common Pleas and Chancery, is the Court of last resort, save the Privy Council in cases over £500. There also is the Court of Quarter Sessions. And an Exceptional Court is the Recorder's Court in cities. There are also the Court of Probate, Surrogate Courts, Heir and Devisee Courts, and Insolvent Debtors' Court.

LOWER CANADA.

The lowest Courts are Commissioners Courts, for the trial of small causes involving £6 5s. and under, presided over by Commissioners named by the Executive. Next, the Circuit Court, presided over by Judges, and having jurisdiction to £50,—an appeal lying, in cases over £15, to the Superior Court. Circuits are established in the cities and rural parts of the country. Then comes the Superior Court for Lower Canada, with unlimited jurisdiction, sitting in seven Superior Districts. The Quarter Sessions may also be mentioned here. The last Court is the Court of Queen's Bench, having an appellate and criminal jurisdiction; to it lies an appeal from the decisions of the Superior Court, and by its Judges the Criminal Law is administered.

An appeal lies from it, in civil matters involving over £500, to the Privy Council of Britain. In all probability, the system of justice will be more decentralized in Lower Canada than it has hitherto been, the policy having formerly been to centre the administration of justice in the large cities. The Legislature, however, at present, seem disposed to generalize the administration of justice, and no doubt the result will be to the popular advantage.

VI. BANKING SYSTEM.

Certain Banks were at an early period chartered, with powers defined by Parliament, and with an amount of capital regulated by their charters of incorporation. These Banks have extended their operations with the growth of the country. Others have since been chartered, and the business of banking has been so prudently managed that there never yet has been a stoppage of a Canadian Bank. In 1850 another system was introduced, the free banking system, the creation of banking capital, and the issuing of a circulating medium, secured by the deposit of Provincial securities with the Receiver General of the Province.

CHARTERED BANKS.

The capital of the Banks not being sufficiently large to accommodate the wants of this growing country, the Legislature has just sanctioned an increase of capital, which doubtless will prove beneficial. The stockholders in these institutions are liable to the debts of the Bank in double the amount of their shares. There are in Canada eight of these Banks, viz :—

1st. The Bank of Montreal, incorporated, having agencies throughout Western and Eastern Canada. The capital is £1,000,000 currency, with power, conferred by a recent statute, to increase the capital by a further sum of £500,000 currency. This Bank declares a dividend of 7 per cent. per annum, and has a Rest or Reserve Fund of £180,000. The increase of capital is, however, subject to the condition that the Bank shall keep invested in Debentures of the Province or of the Consolidated Municipal Loan Fund, one-tenth part of its capital.

2nd. The Bank of Upper Canada, incorporated in 1821. This Bank has also agencies throughout Canada. It is the Bank of Provincial deposit. It also preserves a Reserve Fund set apart from profits. Its present capital is £500,000, with power to

increase it to £1,000,000, subject to the like condition with the Bank of Montreal as to investment. This power has been taken advantage of, and the Stock is generally being subscribed for. This Bank has declared a dividend of 7 per cent. per annum, but is expected for the future to pay 8 per cent., and every stockholder possessing three shares has just received a bonus of one share in paid up stock.

3rd. The Commercial Bank of the Midland District, also a large incorporated institution, with agencies or Branch Banks throughout the towns of the Province, was incorporated in 1832. Its capital was, up to the present year, £500,000. It has been empowered by the Legislature to increase its Stock to £1,000,000 currency. Books have been opened, and as the former shareholders were authorized to subscribe at par, and the payment was distributed by instalments, it is understood that it is now being taken up chiefly in the Province. This institution is also flourishing, paying a dividend of 7 per cent. per annum, and having a rest or fund of £100,000 to meet casualties. The Directors have announced that they will be enabled to pay 8 per cent. during the present year.

4th. The Gore Bank, Hamilton, incorporated, capital £80,000 currency. This Bank has several agencies, and though not so extensive an institution as the others already named is yet conducted satisfactorily, and divides 6 per cent. per annum.

5th. The City Bank, Montreal, incorporated, capital £390,000 currency, with power to increase the same within five years by £60,000 or to £450,000 currency. This Bank pays a dividend of 6 per cent. per annum. It has just declared a bonus from reserve profits of £1 5s. per share of £18 15s. currency.

6th. La Banque du Peuple, incorporated, carries on its operations at Montreal, capital £200,000. It is chiefly under the management of the French Canadian portion of the community. The principle on which it is established is different from that of the other institutions.

7th. The Quebec Bank, the head office being at Quebec, was originally incorporated under a royal charter, with a capital of £75,000, subsequently increased by an Act of the Lower Canada Parliament, and again increased by an Act of the session of 1854, making a total capital of £250,000. The latter increase being under the same restriction as the other augmentations of capital.

All the foregoing Banks issue Bank notes of denominations varying from 5s. to £25.

8th. Bank of British North America. The head office of this Bank is in London, England. It carries on its operations in Canada and the other British North American Colonies. Its capital is £1,000,000 sterling. It divides 6 per cent. per annum. This Bank was restricted to the issue of £1 notes, but in 1850 the chartered Banks were authorized to deposit Provincial securities with the Receiver General, and obtain registered notes from the Inspector General, to the amount so deposited; and of this authorization the British Bank availed itself, and has issued such notes of smaller denominations. Its Stock is held chiefly in England.

BANKS UNDER THE FREEDOM OF THE BANKING ACT.

This Act, passed in 1850, was designed to provide a uniform system in the incorporation and government of future Banks, and the regulation of Banking, but has not been generally taken advantage of.

Banks may be formed by any individual or co-partnership on entering into an agreement for that purpose, and registering the same, whereupon the parties thereto become a body corporate. The shareholders are liable in double the amount of their shares. No individual or Banking Association can issue Bank notes until the sum of £25,000 currency be deposited with the Receiver General in Provincial or Loan Fund securities. On such deposit the Inspector General is authorised to cause notes to be struck to a like amount, to be issued by the Bank, and countersigned by him. The public are carefully protected, and the whole management and conduct of these Banks are regulated by the Act. If a note be not paid, the Inspector General has power to close the Bank, and cause a Receiver to be appointed.

General statements of the operations of such banks are required to be submitted to the Executive and Legislature.

Three Banks have been already organised under this system, namely: the Molson's Bank at Montreal, and the Niagara District Bank at St. Catherines, and the Zimmerman Bank, which have been for nearly two years carrying on the business of Banking. As already stated, the Legislature, while avoiding interference with chartered rights, has yet, in granting to the privately chartered

Banks increased privileges, to a certain extent brought them under the operation of the general system.

As a whole, the Banks of Canada have been judiciously managed: the stocks yield high average returns, and afford a most safe and favorable investment to the capitalist.

Lastly I notice

THE PRESS OF CANADA,

Which, in efficiency, general information, and character, is quite equal and in fact in many cases superior to the Provincial press of Britain, while its benefits are much more generally diffused. The wide ramifications of the press, and the extensive circulation of news by the medium of the newspaper, conduce materially to the spread of general information. In every ordinarily sized town of Upper Canada, and in all the cities of Lower Canada, the press is represented and is liberally sustained. The city sheets especially contain a large amount of reading and editorial matter, reports of debates in Parliament, commercial and general information, and are conducted with ability and energy, exercising an important influence, and making their weight, as the "Fourth Estate," felt by the community.

The growth of the press has been steady and rapid. The following history of the early struggles of the Canadian press is interesting. It is extracted from a lecture delivered at Quebec in 1844, by the late Hon. A. W. Cochran:

"The first newspaper established in Canada was the Quebec Gazette, still existing. The founder of it, Mr. Brown, brought his press from Philadelphia in 1763. By his heirs it was sold to Mr. S. Neilson, who left the establishment, by his will, to his brother, the late Hon. John Neilson, long the experienced and able editor of the paper. There were in 1763 not more than twenty newspapers published in the breadth and length of the then American Colonies, and the Quebec Gazette is the oldest in the British North American Provinces. For nearly thirty years it remained without a competitor, but about 1788 it was followed by a rival, the Quebec Gazette, printed by one Stretchly, and subsequently by the Quebec Herald: both of these papers had but a brief existence. About 1778 the old Montreal Gazette was established by one Mesplet, and was published in French; but being soon discontinued, was assumed about 1794 by Louis Roy, from the Quebec Gazette

office, and after his death two newspapers under that name were published at the same time by one Edwards and by a Mr. Brown, who came also from the Quebec office; and the paper conducted by him being transferred to others, still subsists under the same title. About 1794 a newspaper was published at Quebec in French and English, under the title of the Times or Le Temps, but enjoyed only a limited circulation and short existence; and probably no numbers of it are now extant, except a few in the library of the Literary and Historical Society. The Quebec Mercury commenced its career in 1804, and the Canadien followed it in 1806, but was stopped by the seizure of the press by Government in 1810. Thirty years ago the only newspapers in the two Canadas were the Quebec Gazette and Mercury, the Montreal Gazette and Herald, the Canadian Courant at Montreal (established about 1808,) and the Upper Canada Gazette, commenced at York about 1800. At the present moment (1844) four English and five French newspapers (some of the latter of recent origin and small circulation) are published and chiefly supported in Quebec. In Montreal there are five English and three French newspapers, and one English at Sherbrooke, while in Upper Canada, Toronto sends forth seven, Kingston five, and upwards of thirty others are published in different thriving towns and settlements, from Cornwall on the St. Lawrence and Bytown on the Ottawa to Sandwich. Of these, all are in the English language, excepting one in Gælic and one in German. Nor are these papers in either Province confined to political topics: most of them contain useful selections and general information in various branches of literature and science; and it is pleasing to observe that as far as is known all of them sustain a tone favorable to public morality."

From another source I learn that the newspapers published in Lower Canada in the year 1836 were nineteen. "Of these, five were French and fourteen English. The population of Lower Canada was then 571,930, being 30,000 inhabitants to one newspaper.

The papers published in Upper Canada in 1836 were thirty-one. The population of Upper Canada at that time was 336,469, or one newspaper for ever 10,000 inhabitants.

The number of French and English papers published in Canada East in 1854 was forty-three. Population of Canada East in 1851 was 890,261, being one paper to 20,000.

The papers published in Canada West in 1854 were 114, and the population of Canada West in 1851 was 942,004, being one paper to 8000 inhabitants.

The French papers published in Canada East in 1854 were eleven. French population of Canada East in 1851 was 669,522, being one newspaper to 60,000.

Population of Canada East, other than French Canadians, in 1851, was 220,740. English newspapers in 1854, thirty-two, being one newspaper for nearly 7000 inhabitants.

The total of papers published in both sections of the Province in 1854 was 157. Population of both sections in 1851 was 1,842,205, being one newspaper to 11,099 inhabitants.

In 1836 the proportion in Canada East, that the newspapers bore to the inhabitants, was one to 30,000; now it is one to 20,000.

In 1836 the proportion in Canada West, that the newspapers bore to the population, was one to 10,000: in 1854 it is one to to 8351.

In 1836 the proportion of the French papers in Canada East to the French population was one to 86,000: in 1854 it is as one to 60,000.

In 1836 the proportion of English papers to the English population was one to 10,213: in 1854 it is as one to 7000."

This disparity between the two Provinces is gradually diminishing, and it is hoped will soon altogether pass away, as the result of the general diffusion of education throughout the Lower Province.

CHAPTER VII.

EDUCATIONAL INSTITUTIONS.

The public Educational Institutions of Canada West afford to the Canadian community every facility for acquiring the benefit of a sound ordinary education, or of a more enlarged classical and scientific training.

There are, firstly,

THE UNIVERSITY OF TORONTO,

Formerly King's College, maintained and supported by a revenue derived from a large public grant of lands, originally 223,538

acres, and possessing handsome grounds, an appropriate building, and a full staff of Professors, some of them of eminence.

To this is affiliated the Upper Canada College, a feeder to the University, but which is more properly an Academy. These Institutions afford the opportunity of obtaining a liberal education to the youth of Western Canada, who are desirous of entering the learned professions. The University comprises Faculties of Arts, Medicine and Law. There are several Colleges supported by private resources, of which we will treat elsewhere.

There are, secondly,

THE NORMAL AND MODEL SCHOOLS.

The Provincial Normal and Model Schools were originated with the view of elevating the whole system of public instruction, by creating facilities for teaching the art of instruction as an art, and exhibiting the system in actual and efficient operation. From the dispersion of qualified and trained teachers throughout the country great good will flow.

The buildings of the Normal School are an ornament to the City of Toronto, where they are situated. The grounds comprise seven and a-half acres. The cost of the land and buildings was £25,000. Of the grounds two acres are devoted to a botanical garden, three to agricultural experiments, and the remainder to the buildings, and a gymnasium, it being the design that the lectures on vegetable physiology and agricultural chemistry may be practically illustrated.

Semi-annual sessions of the Normal School are held, commencing on the fifteenth day of May and November in each year, and lasting five months. Male students are required to be eighteen years of age, and females sixteen. They are required to produce certificates of good moral character, and to sign a declaration of the intention to devote themselves to the profession of school teaching. Candidates are admitted free of tuition charges. The course of instruction extends over two sessions, and teachers in training during that session, and those who obtain a first class certificate receive five shillings weekly. They are required to attend once a week religious instruction, communicated by clergymen of the religious persuasions to which they respectively belong. The number in attendance is 120. The Model Schools are male and female. The admission fee to them is very low.

The number of pupils is 400. The reciprocal benefits these kindred institutions confer on each other are very great, and they are fitting appendages of the grand system of public instruction now being so faithfully established and worked out in Canada West. Certificates of qualification of three grades are awarded by the Chief Superintendent to teachers who have emanated from Normal Schools, and their value is well attested by the preference evinced for the holders of first class certificates, by the Trustees of school sections.

There are, thirdly,

THE GRAMMAR SCHOOLS.

The Grammar Schools—sixty-four in number—were formerly called the District Schools, and were established some twenty years ago by the then Legislature of Upper Canada, with a prudent forethought and an anxious desire to erect in every district or aggregation of counties an institution in which the higher branches of education should be brought home to the doors of all. "Each Grammar School is intended to fulfil the double office of a high English school and an elementary, classical and mathematical school,—a school into which pupils will be admitted from the higher classes of the common schools, and receive such an education as will fit them for mercantile and manufacturing pursuits and the higher employments of mechanical and agricultural industry, as well as make them intelligent and useful citizens;—a school also forming a connecting link between the common school and University College, in which youth may be thoroughly trained in the elementary classics, mathematics and physical sciences, for admission to the University, and entrance upon professional studies."

In addition to fees the teachers receive an annual grant of £100 each. They are now required to be graduates of some University. Authority has been latterly given for the amalgamation of the Grammar Schools and Common Schools into one Academy, and in a few of the towns the fusion has taken place, and handsome structures have been erected for the accommodation of the pupils, and staff of teachers. The free school system is an innovation which is extending with considerable rapidity, its principal being the non-exaction of fees, and the supporting of the schools by a general tax. Its imposition is dependent on the will of the people of the section within which the school is situated. If the

education of the people be regarded as a public duty, and one in which all sections and individuals of the community are alike interested, then the free school system will be seen to be a just and commendable one. The Legislature of the country is fully alive to the importance of awarding a liberal support to the educational institutions of the country, and a million acres of land have, by Act of Parliament, been set apart for the support of the schools, while £50,000 are annually given by the Government, and divided equally between the two Provinces, for the support of "the Common Schools," of which, as one of the most important of our institutions, the great nursery of the people, we come now to speak.

COMMON SCHOOLS.

The school system of Canada West is believed to be very perfect in its character, having been originated and elaborated by the assiduous exertions and attention of the Superintendent, the Rev. Egerton Ryerson, D. D. The system is a combination of the excellencies of various systems:—1st, The machinery of the system is adopted from that of the State of New York. 2nd, The principle of the support of the schools is derived from that of Massachusetts, "supporting them all according to property, and opening them to all without distinction; but that the application of this principal should be at the discretion and by the action, from year to year, of the inhabitants in each school municipality." 3rd, The series of elementary text books in use are adopted from the Irish system, viz: those revised and published under the sanction of the National Board of Education in Ireland. 4th, The system of Normal School training of teachers is adopted from that of Germany, which in the language of the Superintendent, "makes school teaching a profession, which at every stage and in every branch of knowledge teaches things and not merely words."

The system of public instruction is engrafted upon the Municipal Institutions of the country, (explained under the head of Social Institutions.) The Municipal Council of each township, dividing such township into school sections of a suitable extent for one school in each, or for both male and female schools. The affairs of each school section are managed by three Trustees, who hold office for three years, and one of whom is elected annually by the freeholders and householders of such section. The Trustees have

ample powers. They determine, says the Superintendent of Education, in the following view of the system, extracted from the Official Report for the year 1853, "whatever sum or sums are necessary for the furnishing, &c., of their school, and the salaries of the teachers, but account for its expenditure annually to their constituents, and report fully to the local Superintendent, by filling up blank forms of Annual Reports, which are furnished to them by the Chief Superintendent of Schools from year to year. The Township Council imposes assessments for the erection of school houses, or for any other school purposes, desired by the inhabitants of school sections through their Trustees. The inhabitants of each school section decide as to the manner in which they will support their school, according to the estimates and engagementes made by the Trustees, whether by voluntary subscription, or by a monthly rate bill of not more than one shilling and three pence per child on parents sending to the schools, or by rates on the property of all according to its assessed value, and opening the school to the children of all without exception. The latter mode is likely to supersede both the others, but its existence and operation in conection with each school depend upon the annual decision of the inhabitants of each school section, at a public meeting called for that purpose.

The duties of teachers are prescribed by law, and their rights are effectually protected. No teacher is entitled to any part of the school fund, who does not conduct his school according to law, and who has not a legal certificate of qualification from a county board of public instruction, nor is any school section entitled to receive any aid from the school fund, in which a school is not kept open six months during each year, by a teacher thus recognized as to both moral character and attainments. The law also requires a public quarterly examination to be held in each school.

The inspection of the school is made by local Superintendents, who are appointed by the County Councils, and who may be appointed for each county, or one for one or more townships, at the pleasure of each County Council. Each local Superintendent is entitled to at least one pound (four dollars) per annum for each school under his charge. He is required to visit each school, at least twice a year, and to deliver a public lecture on education in each school section once a year, besides apportioning the school

moneys to the several school sections within his jurisdiction, giving cheques on the order of Trustees to qualified teachers, upon the county treasurer or sub-treasurer, aiding in the examination of teachers, deciding various questions of dispute and reference, corresponding on school matters, and reporting annually to the Chief Superintendent according to the forms prepared and furnished by him.

Besides the local Superintendents, all Clergymen recognized by law, Judges, Members of the Legislature, Magistrates, Members of County Councils, and Aldermen, are school visitors, to visit all the schools as far as practicable, within their respective charges. Their visits are voluntary; they are desired "especially to attend the quarterly examination of schools, and at the time of such visits to examine the progress of the pupils, and the date and management of the schools, and give such advice to teachers and pupils, and any others present, as they may think advisable in accordance with the regulations and instructions which shall be provided in regard to school visitors according to law." The law also authorizes the holding of general meetings of school visitors, in any municipality, on the appointment of any two visitors, "to devise such means as they may deem expedient for the efficient visitation of the schools, and to promote the establishment of libraries, and the diffusion of useful knowledge."

There is a Board of Public Instruction in each county, consisting of local Superintendents, and the Trustees of the Grammar Schools in such county. These County Boards consist largely of the clergy of different religious persuasions, associated with some of the most intelligent laymen in each county, so that the country has the best guarantee that its circumstances will admit for the moral character and intellectual qualifications of teachers. The teachers are examined and arranged in three classes, according to a programme of examination prepared and prescribed by the Council of Public Instruction for Upper Canada.

The Municipal Council of each county is responsible for raising at least an equal sum for salaries of teachers in the several townships within its jurisdiction, with that which is annually apportioned to them out of the Parliamentary appropriation, by the Chief Superintendent of Schools. The County Councils also appoint the local Treasurers of the school fund, and the local Superintendents of schools, and provide for their salaries. Special

provision is also made for the security of the school fund against the diversion of any part of it, and for the prompt payment of it to teachers at the times specified by law. Both the County and Township Councils have authority to raise any sums they think proper for public school libraries, under regulations prescribed according to law. A Parliamentary appropriation has been made for the establishment of school libraries, to be expended on the same conditions, with the appropriation for the support of schools.

The law also provides a system adapted to the circumstances of cities, towns and incorporated villages. In each city and town there is one Board of Trustees, for the management of all the schools in such city and town, two Trustees elected for each ward, and holding office for two years, one retiring annually. In each incorporated village and town divided into wards there is a Board of six Trustees elected, two retiring from office and two elected each year. These Boards of Trustees, thus constituted, appoint the local Superintendent, and determine upon the number and kinds of schools, the employment of teachers, and all the expenses necessary for the schools in each city, town or incorporated village; and the Municipal Council is required in each case to raise the sum or sums estimated by the board of Trustees, for all their school purposes, and in the manner that they shall desire. There is also the same provision for the establishment of libraries in each city, town and village, as exists in respect to their establishment in each township and county.

At the head of the whole system we have a Council of Public Instruction and a Chief Superintendent of Schools, both appointed by the Crown. The Council has the entire management of the Provincial Normal and Model Schools, recommends the text books for the schools, and books for the school libraries, and makes the regulations for the organization, government and discipline of Common Schools, the examination and classification of teachers, and the establishment and care of school libraries throughout Upper Canada.

The Chief Superintendent, who is, *ex-officio*, member of the Council of Public Instruction, and provides accommodation for its meetings, apportiens the school fund to the several municipalities throughout Upper Canada, prepares the general school regulations, and submits them, as well as the text library books, to the consideration of the Council; prepares the forms of reports and

proceedings under the Act, and gives instructions for conducting them, as well as for holding teachers institutes; decides questions of dispute submitted to him; takes the general superintendence of the Normal Schools; provides facilities for procuring text and library books; and provides and recommends plans of school houses; prepares annual reports; corresponds with local school authorities throughout Upper Canada, and employs all means in his power for the promotion of education and the diffusion of useful knowledge. He is responsible for his official conduct, and for all monies that pass through his department.

Such is an epitome of the system of public elementary instruction in Upper Canada. The foundation may be considered as fairly laid, and something has been done towards rearing the superstructure. There has been an annual increase in the statistical returns of each branch of the Common School system since its establishment. The system is to a great extent voluntary. Each municipality exercises its discretion, as to whether it will or will not accept the Parliamentary appropriation upon the conditions specified, and each school section does the same in regard to the terms on which aid is offered in support of its school. The general regulations and oversight are such as merely to secure a fulfilment, in each localitity, of conditions which are required by the Legislature, the collective wisdom and voice of the country, and to maintain a standard of teaching that will prevent funds provided for the promotion of knowledge from being prostituted upon ignorance and vice. The working of the Common School system is a great social development, and fraught with results which can be more easily conceived than described."

A year has elapsed since the penning of the foregoing extract by its writer, and the annual report of 1853 evinces the continued success and advantages of the system.

The aggregate sum raised for all educational purposes in Western Canada was in 1853 the noble sum of £199,674 1s. 5d., being an increase on any preceding year of £23,598 1s. 5d. The aggregate sum raised for the erection and repairs of school houses was £80,730 11s. 10d. The number of pupils in attendance was in the aggregate 194,736, the increase during the year being 15,149. A recent feature of the system is the establishment of school libraries selected by the Superintendent, and the issue of school maps. When the report issued, 90,000 volumes of gene-

ral information had thus been circulated. Local efforts for raising funds are supplemented to the extent of 75 per cent. The number of schools was, in 1853, 3127, and of these 1052 were free. 2117 lectures were delivered during the year, in schools, on subjects connected with the system.

In closing this important chapter, the collegiate institutions which are independent of public aid are deserving of notice:

The oldest of these is

THE UNIVERSITY OF QUEEN'S COLLEGE, SITUATED AT KINGSTON.

This institution, holding a Royal Charter, was originated by members of the Church of Scotland, and endowed by private liberality. It comprises Faculties of Arts and Medicine, and a Divinity Hall, and also a school. It has a staff of four Professors. Recently, a purchase has been made of a large and commodious building for its accommodation. It is calculated from its situation to be of much benefit to Central Canada. Though under the management of a Board of Trustees named by the Scottish Church in Canada, there are no tests, and it is conducted on a liberal basis, affording a sound substantial education.

TRINITY COLLEGE

Is conducted at Toronto, under the auspices of the Episcopal Church, and also holds a Royal Charter. It was established when University College became a public institution. Handsome buildings have been erected, and a large sum raised for its endowment. It embraces Faculties of Arts, Medicine, Law and Divinity, and is conducted with much vigour.

VICTORIA COLLEGE

Is an institution of the Wesleyan Methodist denomination, established at Cobourg on Lake Ontario. Large and commodious buildings have been erected, and it has been for some years in effective operation. With it has lately been affiliated the Toronto School of Medicine.

THE COLLEGE OF REGIOPOLIS

Is situated at Kingston, and is maintained and carried on under the superintendence of the Roman Catholic Bishop of that city.

MEDICAL INSTITUTIONS.

A Medical Board for Canada West is organized by Act of Parliament, and meets quarterly in Toronto for the examination of candidates.

The Toronto College of Medicine, already mentioned, holds a session of six months annually. The course embraces the various branches of medical education. Schools of medicine in connection with the University of Toronto and with Trinity College, Toronto, and Queen's College, Kingston, are in operation, affording opportunity for obtaining a sound medical education.

On the whole, Canada has every reason to be proud of her Educational Institutions, and their bearing on her future is very important, inasmuch as, no doubt, they must tend to her advancement and progress in general enlightenment. Her system is a noble one, inferior to none pursued in older countries; it is superior to that of many.

LOWER CANADIAN EDUCATIONAL SYSTEM.

Regarding the Lower Canadian system as being in a transition state, I notice it briefly. It is not yet, from a variety of causes so far, as efficient as the Upper Canadian, but to which it may be advantageously assimilated. Teachers are licensed by Boards of Trustees, Protestant and Catholic. The great majority of the people in the rural parishes, with the exception of the Eastern Townships, are attached to the Catholic faith, hence separate schools are erected by the Protestants wherever their numbers enable them to support them.

A Superintendent of Education is in charge of the whole system, aided by School Inspectors having certain districts under their charge, and reporting as to their efficiency to the Superintendent. Teachers are licensed to teach by Board of Examiners, respectively Protestant and Catholic. Such teachers, according to their qualifications, are authorised to teach Common or Model Schools. The state of education in Lower Canada is not so encouraging as in Upper Canada, but still progress is being made, and the two systems might be profitably assimilated. Opportunity of obtaining the higher branches of education is amply provided, but a class of schools of higher standard than the primary schools, and intermediate between them and the Colleges, is a desideratum. Academies are, however, beginning to spring up in various parts of the country, and a few years will doubtless witness a rapid advance in the diffusion of sound education throughout the masses of the people. To this end, the extension to Lower Canada of the

efficient municipal system of Upper Canada will materially contribute, as the one institution re-acts upon and is mutually helpful of the other. The character and features of the education communicated varies with the character of the school, whether French or English. In some portions of the country the schools are exclusively English, or nearly so, as in the Eastern Townships; but the great majority of the schools are French in Lower Canada. Where the English families have settled in the midst of a French population, a dissentient English school is generally opened. In 1852 there were in Lower Canada, according to the official Report of the Superintendent of Education, 2277 schools in actual operation, of which 2006 were Elementary Schools, 78 Model Schools, and 71 schools of a superior class for girls. There were 138 Independent Schools. There were in all 30 Collegiate and Academical Institutions, and 36 schools attached to convents. The total number of pupils in attendance on all these schools was, in 1852, 97,582. Lower Canada as well as Upper Canada receives from the Legislature its share of the annual appropriation for school purposes of £50,000.

The educational system of Lower Canada, suffering hitherto from many disadvantages and difficulties, referable to the mixed origin of the population, and other causes, still requires a large measure of improvement, and no doubt the serious attention of the Legislature, alive to the best interests of the country, will be given to the subject, and an improved system adopted, which may, it is hoped, place the benefits of a sound education within the reach of all.

COLLEGIATE INSTITUTIONS.

There are many of these in Lower Canada, all, with the exception of McGill and Lennoxville Colleges, connected with the Roman Catholic Church.

McGill College was founded by a late merchant of Montreal, the Hon. Mr. McGill, who endowed it with considerable landed property. It went into operation in 1842. It is constituted under a Royal Charter, and managed by governors. There are in connection with it Faculties of Arts, Law and Medicine. The school of medicine, commenced previously to 1842, has long maintained a very high reputation for the thoroughness of the education communicated. In 1852 there were sixty-four medical students in attendance on the lectures.

The High School of Montreal has been connected with this institution: it is conducted on the plan of the Edinburgh High School.

At Quebec there is also a High School of a similar nature.

At Lennoxville there is the Lennoxville College, in connection with the Episcopal Church, where there are Faculties of Arts and Divinity.

Besides these, which are connected with the Protestant community, there are twelve Colleges, situated in various parts of Lower Canada, in connection with the Roman Catholic Church, and in which a classical education is afforded, and is freely taken advantage of by those who design entering the learned professions.

CHAPTER VIII.

POLITICAL INSTITUTIONS.

To obtain a correct view of the position of some of these it will be necessary to bear in mind that Canada was originally a colony of France. In Upper Canada the Common Law of England, and Statutory Law also, as enacted until the constitution of the Local Legislature, prevails; but the Statutory Law has from time to time modified the existing laws, as circumstances demanded.

In Lower Canada, on the contrary, a different system prevails. The law of France, as it was in force at the conquest, including the Custom of Paris and the Edicts of the French Kings, which were enregistered in the Conseil Supérieur of Quebec, and those of the Intendants, &c., continue to have in civil matters the force and effect of law, except in so far as they have been or may be modified by the Statutes of Lower Canada and of United Canada, and that the English Criminal Law prevails in criminal matters. In 1791 the Act commonly called "The Constitutional Act," was passed, providing, amongst other important enactments, that lands might be granted in free and common soccage, and providing generally for the government of the Province of Quebec, as Canada was then called. By this tenure the lands in the Eastern Townships are held. It resulted from the retention of the French Law in the then Province of Quebec, that as an incident of it the feudel system of Fiefs and Seigniories was retained and is still in force, though on the eve of

abolition. This feudal system, it may be remarked, is identical in many respects with that which once prevailed in England, and the traces of which are yet to be found in some of the almost absolete tenures of Britain.

The country was divided into Seigniories, and granted on certain conditions to Seigniors. The Seigniors were entitled to receive in virtue of their concessions, by law, certain dues from the *censitaires*, the most onerous being the *lods et ventes* and, though to a limited extent, the *cens et rentes*. They were entitled to other rights incident to the feudal tenure, one of the most lucrative being the *droit de banalité*, which compelled the *censitaries* to bring their grain to his *banal* mill. The *lods et ventes* also were found, as the resources of the country increased, to retard it simprovement, the Seigniors being entitled to a twelfth of the purchase money on every mutation of property by way of sale. The *rentes* were not so heavy a burden, but for some years a growing disposition has been evinced to alter the features of the tenure, or to abolish it entirely, and the result has been, in the present Session of the Parliament, the adoption (after long and protracted debates, and continued efforts at remodeling the measure,) of an Act which will terminate the system, extinguishing the tenure and at the same time compensating the Seigniors for their lucrative rights, on an estimation to be made of them by Commissioners to be appointed by Government. The Province itself assumes the payment of a certain portion of the indemnity. It is matter of rejoicing that a measure so generally equitable in its provisions should have been adopted, and a change of tenure brought about without violent expropriation and infringment of the rights of individuals, as in less peaceful revolutions often happens. Beyond doubt the change of tenure will benefit Lower Canada, and induce the current of emigration to set more freely into it than it has hitherto done.

By the 31st George III., chapter 31, the Constitutional Act was amended in certain very important respects, and the Province of Quebec was divided into two separate Provinces, called Upper and Lower Canada. The Act constituted in each Province a Legislative Council and Assembly, having power to make laws for the peace, welfare and good government thereof, not repugnant to the Act. The Legislative Council in each Province was to consist of not fewer than fifteen Councillors for Lower Canada

and seven for Upper Canada, summoned by a Patent under the Great Seal of the Province, and holding office for the term of life. In order to constitute the Assemblies, the Governors or Lieutenant Governors were authorized to divide each Province into counties, districts or circles, and towns, and townships. The Lower Canada Assembly was to consist of not less than fifty members and the Upper Canada of not less than fifteen. The freehold in the counties was constituted at forty shillings per annum, and after constant changes and modifications is still retained. The Councils and Assemblies were designed to meet once in each year, and the duration of each Assembly was four years.

Under this Act, the Legislatures of the Province remained while separate, save that in Lower Canada the constitution was temporarily suspended, and a Special Council exercised the Legislative power.

In 1840, however, the Provinces were re-united, and constituted into the Province of Canada, with one Legislature, composed, as before, of a Legislative Council nominated by the Crown, and an Assembly of eighty-four members elected by the people, forty-two from each Province. Under this Act the Government of the country has been conducted; but the House of Assembly has been latterly increased to one hundred and thirty members, sixty-five from each Province, returned by counties, cities and towns. The Legislative Council is appointed by the Crown. Before a statute becomes law, the assent of the two Legislative bodies and of the Crown is necessary. Money Bills originate in the People's House. The power of the Legislature is almost unchecked, regulating taxes, customs, private rights, and the general government of the Province by its Acts, the Queen rarely withholding, as she has power to do, her assent from a measure. Sessions are required to be held annually, and the duration of the Parliament is four years, though it may be previously dissolved by the Governor General.

The Government of the Province is conducted by a Governor General appointed by the Crown, who presides at the deliberations of an Executive Council nominated by the Crown, but who must, according to the theory of Responsible Government, in practical force in Canada, possess the confidence of the people, as evinced by a majority of the House of Assembly; and who, consequently, may lose their places on a vote of want of confidence. The Executive Council is composed of the following officials, viz:

a President of the Committees of the Council (who is also Chairman of the Bureau of Agriculture, and of the Board of Registration and Statistics;) a Provincial Secretary, an Inspector General, a Commissioner of Crown Lands, a Receiver General, one Attorney and one Solicitor General, one of each for each section of the Province; a Commissioner of the Board of Public Works, and a Postmaster General. These incumbents preside over the public departments indicated by their titles, in addition to exercising the functions of Executive Councillors. On the acceptance of office, the incumbent elect, unless a Legislative Councillor, must present himself to the people for re-election. The Solicitors General are not necessarily Members of the Cabinet.

Such is the system of governing by Legislative majorities and responsibility to the electors, which is in force in Canada. Practically the Government of the Province is self-government, the British Government rarely interposing the weight of its authority, but, on the contrary, distinctly enunciating its desire to allow the Province the widest latitude in self-government, compatible with the Colonial relation. In fact, the Canadas enjoy the largest measure of political liberty possessed by any country or people. The public offices, and the seats in the Legislature, are practically open to all. The people, by their representatives in Parliament, regulate all matters of Provincial interest, and by their municipal system they regulate their municipal matters, while they possess and exercise the power of rejecting at the polls those who have forfeited their confidence. The inhabitants of Canada are bound to Britain by the ties of common interest, common origin, and filial attachment. Owing a grateful allegiance to their Sovereign, they are proud to share the heritage of Britain's ancestral glories, while they are not slow in evincing their sympathy with her struggles, as the munificent grant of £20,000 sterling, gracefully appropriated by the Legislature to the Patriotic Fund, and to the widows and orphans of the soldiers of her ally, France, proudly shews. The policy of Britain is a wise one. She is building up on the broad foundations of sound political liberty, freedom of thought and conscience, a colony which will one day, (though the connection will never be rudely severed,) attain the position of a nation, and peopled by inhabitants knit to Britain by the strongest ties of blood, and identity of feeling, will strengthen her hands and support her position by the reflex influence of sound, national and constitutional sentiment.

The future of Canada is a brilliant one: a great problem is being wrought out in her history; and, on review of her immense resources, and on a glance at her hardy, self-reliant population, the mind is irresistably urged to the conclusion that her destiny is a grand one, and that, on this American continent, she may yet be destined to play no insignificant part among the role of peoples.

CHAPTER IX.

GENERAL STATISTICS.

In this chapter it is designed to throw together such facts and figures, illustrative of the progress of Canada, as have not necessarily been interspersed through other portions of this Essay, in treating of the various subjects it embraces. The result of this compendium will, no doubt, be the dispelling of an error which is thus alluded to, in the words of a Report of the Board of Registration and Statistics of the Province of Canada: "It is believed that a very general feeling prevails, not only in the mother country, but even in Canada, that her growth and prosperity are not commensurate with that of the United States; and, without any inclination to conceal or deny the rapid progress of our neighbours, it may be well, by a few facts compiled from statistical returns, to prove how erroneous such an impression is, the growth of Upper Canada, taking it from the year 1800, having been nearly THRICE *that of the United States.*"

POPULATION.

The total population of Canada, according to the Census of 1851, was 1,842,265.

"According to the 'World's Progress,' a work published in New York in 1851," says the Report before quoted, "the free population of the United States was, in 1800, 5,305,925; in 1850 it was 20,250,000; (in 1810 it was 7,239,814:) thus in 50 years its increase was not quite 400 per cent., whilst that of Upper Canada was upwards of 1100 per cent. for the forty years from 1811 to 1851.

The steady increase of the population of Western Canada is apparent from a comparison with that of other countries, as insti-

tuted in the same Report, of the statistics and of the facts contained in which free use is hereafter made.

The United States Census of 1850, as diminished by allowance for the population of territorial accessions since the previous Census, was in

1850.....	23,091,488	
1840.....	17,067,453	
Increase in 10 years.....	6,022,035,	or 35·27 per cent.
Great Britain, Census of 1851.....	21,121,967	
Do do 1841.....	18,658,372	
Increase in 10 years.....	2,463,595,	or 13·20 per cent.
Upper Canada, Census of 1851.....	952,004	
Do do 1841.....	465,357	
Increase in 10 years.....	486,647,	or 104·58 per cent.

Lower Canada has not increased with the same rapidity, owing to Upper Canada having hitherto received the greater proportion of the emigration from Britain and Europe; still her progress has been steady.

In 1827 the total population of Canada East was 423,378. In 1831 it was 511,920. In 1844 it was 690,782. In 1851 it was 890,026, having been doubled in twenty-four years. And the increase in the 13 years between 1831 and 1844 was 13·94 per cent.

Again, take a comparison between Canada West, or Upper Canada, and three States of the American Union, Ohio, Michigan, and Illinois: in 1830, according to the United States Census, these States contained 1,126,851; in 1850 they contained 3,505,000, a little over 320 per cent. in twenty years; while Upper Canada, in the like period of 20 years, increased over 375 per cent. In 1830 the population of Canada West was 210,437. In 1849 it contained 791,000.

The tide of emigration in the States is flowing westward to Iowa, Wisconsin, and the banks of the Missouri, while in Canada it is also tending to the western section of Upper Canada and peopling the fine arable lands there inviting cultivation. The Counties of Huron, Perth and Bruce increased from 5600 in 1841, to 37,850 in 1851, upwards of 571 per cent. in ten years. The Gore and Wellington Districts increased 1900 per cent. in thirty-three years, up to 1850. The Western District

increased over 700 per cent., the London District 550 per cent., the County of Niagara 380 per cent., while in eight years the County of Oxford doubled its population. Some portions of the rural parts of Lower Canada are also rapidly advancing. The County of Megantic, which has attracted an Irish emigration, in seven years, from 1844 to 1851, increased from 6449 to 13,835, or at the rate of 115·40 per cent. The County of Quebec in seven years advanced from 12,800 in 1844 to 19,074 in 1851, or 50 per cent. The County of Ottawa in the same period has increased from 12,434 to 22,903, or 84·42 per cent. The County of Drummond, from 9354 to 16,562, or 77·28 per cent. And the County of Sherbrooke, in which the British American Land Company have large possessions, and which a railway traverses, from 13,485 to 20,014, or 49·47 per cent.

Doubtless for the future the emigration to Lower Canada will be larger, as the Seigniorial Tenure will no longer deter those desirous of settling. Before proceeding to notice the rise in population of some of the leading towns this will be an appropriate place to introduce, as connected with the general increase of the population, the statistics of emigration to the Province for some years back.

EMIGRATION.

There arrived at Quebec the following number of emigrants in the years specified, viz :

In the years	1847.	1848.	1849.	1850.	1851.	1852.	1853.	1854.
Natives of England and Wales	28725	6034	8980	9887	9677	9276	9585	18175
" Ireland	50360	16562	23126	17976	22381	15983	14417	16175
" Scotland	3628	3086	4984	2879	7042	5477	4745	5446
" B. N. A. Colonies	.....	842	968	701	1106	1184	496	875
" The Continent	7437	1395	436	849	870	7256	7456	11537
	90150	27939	38494	32292	41176	39076	36699	53183

It will be noticed that the emigration attained its maximum in 1847, the period of the Irish exodus, and during the past year it again reached its highest point since the year 1847. This is owing in part to accidental causes, a large influx of English and Scotch emigrants being doubtless attributable to the importation of skilled workmen for the great system of railways in progress, while the large arrival of continental emigrants is owing to a preference for the Canadian route as the safest, cheapest and best route to the Western States. This emigration will no doubt

increase, and while some settle in the County of Waterloo and elsewhere in Western Canada, where German colonies are planted, the majority will wend their way through the Canadian waters to Iowa and the Western States. The management of this trade is of no slight importance to Canada, as in 1851 upwards of 300,000 emigrants arrived in New York, and the current of this emigration tends westward, the avenues open to it being either the Erie Canal with its tedious lockages, or the American railway chain with its many breaks and transfers, or on the other hand, and immeasurably superior, the noble navigation of the St. Lawrence, and the short Canadian Great Western Railway across the western peninsula of Canada. Of the emigration of the past year to Canada, 1786 steerage and 429 cabin passengers arrived by the Canadian line of steamers,—the commencement of a great trade. It is believed that the three Canadian lines of steamers will divert to the shorter and more expeditious Canadian route a large portion of the emigration to America. Of the continental emigrants 11,060 were natives of Germany, 5811 Norwegians, 910 Swedes, and 231 natives of Holland. The excellency of the routes as regards salubrity is demonstrated by the fact that though cholera was prevalent during the summer season of 1854, the deaths on the passage of the total emigration to Canada was but 0.92 per cent.

In Quarantine,..... 0.08 do

And the total on emigrants embarked.. 1.00 do

The navigation of the Canadian waters being now free, an immense tide of emigration may be expected to pass through the St. Lawrence and the Canadian Lakes on its way to the great West.

RISE OF TOWNS.

Dundas in six years increased from 1700 to 3517. Brantford, during the year 1850–1851, rose from 3200 to 4000, or 25 per cent. Belleville, in the same period, increased from 3500 to 4569; and London from 5124 to 7035, while it has now attained a population of 10,000, and been established as a city. Galt increased in five years from 1000 to 2248; and Guelph in seven years, from 700 to 1860. Woodstock has increased in 1850–51, from 1200 to 2112; and Ingersol in four years has increased from 500 to 1190.

Kingston in 10 years increased from 6,292 to 11,585.
Toronto in " " " " 14,249 to 30,775.

This latter city, in 1793, was, it is stated, occupied by a single wigwam, and in 1797 contained only 12 families. In 1794 the site was selected for a town.

In 1801 the population of the city was					336
" 1830	"	"	"	"	2,860
" 1845	"	"	"	"	19,706
" 1851	"	"	"	"	30,775

and is now much greater. The assessed value of the rateable property in Toronto was, in 1851, £3,116,400.

Hamilton was laid out in 1813:

It contained in 1836 only	2,846	inhabitants.		
" " 1846	"	6,832	"	
" " 1851		14,112	"	

All the foregoing towns are in Western Canada.

Montreal, in Lower Canada, contained, in 1816, 16,000 inhabitants; in 1851, 57,715, and it is believed now to contain 70,000 inhabitants. It is rising steadily and surely, as the following statements, compiled from the Annual Reports of the City Treasurer, shew:—In 1851 the market revenue was £6704 12s. 3d.; the duty on business for 1850, was £5849 4s. 0d.; the assessment and personal taxes for the fiscal year ending on the 31st January, 1851, were £14,447 19s. 1d. For the year 1854, the following is the statement of the same features, exhibiting a steady advance: duty on business, £9311 10s. 6d.; market revenue, £8137 6s. 7d.; assessment and personal taxes, £20,232 10s. 0d., the rate of assessment being 1s. 6d. in the pound on the rental.

Quebec, in 1816, according to Talbot, contained 14,880 inhabitants; in 1851 it contained 42,052.

Bytown, in Upper Canada, in 1830 contained 150 houses; it is now the City of Ottawa, with 10,000 inhabitants. Nor are these isolated instances: Paris, Woodstock, Galt, Guelph, Cobourg, Peterboro', Stratford, Port Hope, St. Catherines, Perth, Brockville, are among the many rising towns which are rapidly augmenting their population in Western Canada; while in Lower Canada, Sherbrooke, St. Hyacinthe, and Three Rivers, may be mentioned as rising in importance, besides many minor villages.

POPULATION OF WESTERN CANADA BY ORIGIN.

Canadians, not of French origin,	526,093	United States,	43,732
England and Wales,	82,699	From other countries,	20,995
Ireland,	176,267		
Scotland,	75,811		952,004
Canadian, French,	26,417		

RELIGIOUS CENSUS.

Church of England,	223,190	Baptists,	43,353
" Rome,	167,695	Lutherans,	12,089
Methodists,	207,656	Other Creeds,	91,873
Presbyterians,	204,148		

CHURCHES.

Church of England,	226	Congregationalist,	84
" Rome,	135	Baptist,	116
Presbyterian,	257	Bible Christian,	46
Methodist,	471	Other places of worship,	185
Quaker,	18		
Lutheran,	22		1159

as per Census Report of 1851, being one place of worship for every 612 inhabitants, affording accommodation for 470,000 persons, and at an average cost of £300 each, amounting to £467,100, including only those in the Census Report, which is possibly incomplete. It is believed that the Census of religious beliefs throughout the Province is not to be depended on as correct, but may prove an approximation.

POPULATION OF LOWER CANADA BY ORIGIN.

Canadians of French origin,	669,528	United States,	12,482
" not of "	125,580	Other countries,	5,377
England and Wales,	11,230		
Ireland,	51,499		890,261
Scotland,	14,565		

RELIGIOUS CREEDS.

Church of Rome,	746,860	Presbyterians,	33,535
" England,	45,402	Baptists,	4,493
Methodists,	21,183	Other creeds,	38,782

CHURCHES.

Roman Catholic,	340	Methodist,	60
Church of England,	111	Congregationalist,	20
Presbyterian,	57	Jews' Synagogue,	1

or one place of worship for every 1459 inhabitants, including only those churches returned on the Census lists.

AREA.

According to Bouchette, Canada contains an area of 346,863 square miles. Lower Canada 205,683, and Upper Canada 141,000, "an extent about six times, (as Professor Lillie, in his valuable lectures on Canada, of the careful statistics in which the writer has made free use, justly remarks,) that of England and Wales,"—surely ample room and verge enough for expansion, and for the accommodation of the redundant population of Europe.

Compared with the United States, the area bears to the area of that country the proportion of one-sixth. In population it is more than one-thirteenth; in occupied acres, one-seventeenth; in growth of wheat, very nearly one-sixth of the whole Union.

AGRICULTURAL PRODUCE.

A comparison between the produce of Canada and the United States is exceedingly interesting, and the following has been prepared from the Report of the Board of Registration and Statistics:

	Population	Total Acres.	Occupied Acres, cultivated & uncultivated.
Canada	1,842,265	155,188,425	17,939,796
Ohio	1,980,427	Not given.	17,999,493
U. States and Territories..	23,263,488	"	303,078,970

	No. of acres of wheat.	No. of bushels of wheat.	No. of bushels per acre.	Assessed value of occup'd lands.
Upper Canada...	780,385	12 675,603	16 14/60	£36,670,890
Lower Canada...	355,926	3,480,343	9 50/60	29,208,158
All Canada.....	1,136,311	16,155,946	14 12/60	65,879,651
Ohio.....	1,231,437	14,487,351	12	89,689,661
United States...	Not given.	100,503,899	Not given.	817,683,273

	Value of occupied land per acre.	Total value of wheat at 4s. per bushel.	Total value of live stock.
Upper Canada...	£3 14 7	£2,535,124	£6,133,354
Lower Canada...	3 12 0	696,069	4,814,183
All Canada.....	3 13 5	3,231,190	10,947,537
Ohio.....	4 19 8	2,897,470	12,793,587
United States...	2 14 0	20,100,780	144,223,120

In Ohio the cities and towns are included, in Canada they are excluded.

	Bushels.
The total export of wheat, in 1851, from Canada, was..	933,756
" " of flour, 668,623 barrels, or.....	3,343,175
Total home consumption, 5 bushels for each individual of population of 1,842,265.....	9,211,325
Total seed at 1½ bushels per acre.....	1,674,466
Total number of bushels of wheat as per calculations..	15,162,662
And per Census returns, Upper Province, 12,802,272	
Lower Province, 3,400,000	
	16,202,272

In the United States the growth of wheat has increased about 48 per cent. in the last ten years, while in Upper Canada it increased 400 per cent. The increase of the growth of Indian corn in the United States, for the ten years between 1840 and 1850, was 56 per cent., whilst in Canada in the last nine years the in-

crease has been 163 per cent. The increase in the growth of oats in the United States in the same period was 17 per cent., while in Upper Canada it was 133 per cent., and in Lower Canada 41 per cent., or, in both together, 70 per cent. In peas the increase in Upper Canada, in nine years, has been 140 per cent.

Contrasting Canada with Ohio, which presents in every respect the most favorable comparison, the result is gratifying. The occupied lands uncultivated are ten and a-half millions of acres, to eight millions in Ohio. The unoccupied lands in Canada are 137 millions of acres, in Ohio seven and a-half millions. The ratio of the increase in population of Ohio in the last ten years was 33½, in Upper Canada it was 104½. The number of cultivated acres in Ohio is one-fourth greater per inhabitant than those of Canada, yet the bushels of wheat are one-twelfth less than in Canada.

Canada possessed, in 1851, 46,939 more milch cows than Ohio. Ohio exceeds the average of the whole United States in the amount of butter per cow by 27 per cent., and Upper Canada exceeds that average by 9 per cent.

The number of sheep in Canada is.....1,600,000
Horses..... 385,801
Young cattle..... 435,305

An increase in nine years of 48 per cent.

Canada contrasted with the State of New York:

In 1810 New York contained.. 959,049 inhabitants.
" 1840 " " .. 2,428,921 "
" 1850 " " .. 3,200,000 "

In 1850 its population was three and one-third times more than it was 40 years before, while Upper Canada in the same year was ten times greater in population than it was in 1811.

Taking Ohio, Michigan and Illinois together:

In 1830 they contained in all 1,126,851 inhabitants.
In 1850 " " 3,505,000, or 3⅕ times that of 1830.

Canada West contained:

In 1830.....210,437 inhabitants.
In 1850.....791,000, over 3¾ times that of 1830.

The progress of Canada then is indeed satisfactory from every point of view. She is destined yet to accommodate a much more congregated population. Were the land even now occupied peopled as densely as England, it would accommodate a population

of 11,000,000, while on its broad surface there is room enough for twenty times its present population.

REVENUE.

The revenue of Canada, derived from Customs Duties, has been augmenting rapidly, as the annual statements indicate:

Gross Revenue in

1849	1850	1851	1852	1853
£144,547 5 1	£615,694 13 1	£737,439 0 2	£739,263 12 9	£1,029,782 15 4

A glance at the general balance sheet of the Province, as extracted from the public accounts for 1853, will further prove satisfactory.

GENERAL REVENUE AND EXPENDITURE.

Revenue.

	£	s.	d.	£	s.	d.
On the 31st January, 1854, the balance at the credit of the Consolidated Fund was	383,699	14	4½			
Customs	1,029,782	15	4			
Excise	27,405	14	5			
Territorial	93,770	4	2			
Tax on Bank circulation	23,053	19	4			
Revenue from public works	123,002	6	7			
Fines and Forfeitures	4,465	16	8			
Casual Revenue	15,006	15	4			
Law-fee Fund	4,169	11	11	1,320,659	8	9
Total currency				1,704,350	3	0½
By balance brought down				834,668	0	5½

Expenditure.

31st January, 1854.	£	s.	d.	£	s.	d.
Interest on public debt	227,383	15	1			
Civil Government	36,103	17	5			
Administration of Justice	89,134	12	1			
Provincial Penitentiary	7,000	0	0			
Legislature	66,237	0	0			
Education	101,335	19	2			
Agriculture	13,811	15	4			
Hospitals and Charities	27,309	9	3			
Provincial Geological Survey	1,486	12	10			
Militia	2,083	10	2			
Light Houses	17,377	12	0			
Emigration	752	4	2			
Pensions	11,643	0	2			
Indian Annuities	7,755	0	0			
Census	2,826	15	4			
Sinking Fund	73,000	0	0			
Miscellaneous	58,954	0	0			
Expenses of collection, including £26,138 7s. for repairs to public works	125,964	15	8	869,871	12	8
To balance at credit of the Consolidated Fund				834,668	10	5½
				1,704,350	3	1½

It will be noticed that £75,000 was, during the year, paid into the Sinking Fund, a fund providently constituted for defraying the public debt, as it may mature, the fund being invested in British securities. The sum so previously invested in reduced 3 per cent. annuities was £454,434 sterling. During the fiscal year, £220,095 of sterling 5 per cent., and £264,573 12s. 6d. of 6 per cent. debentures were redeemed by the Province.

THE SECURITIES OF CANADA.

As Canada is now occupying a more prominent position than she has done hitherto, and will gradually assume a yet more important place in the estimation of the people of Britain, as her capabilities become more widely appreciated, and her resources more fully developed, reliable information with regard to the nature and character of the various securities of the Province, which are from time to time offered for sale, will prove useful.

There are then, first, the debentures of the Province, payable out of its revenues, and to secure the extinction of which, a sinking fund has been providently created. As to the character and stability of these securities there can be no question. Representing debts incurred chiefly for provincial improvements, and issued by a country possessed of so many elements of material prosperity as Canada, and one increasing so steadily in population, there can be no reasonable risk of their being duly provided for, and hence Canada six per cents are eagerly sought for as permanent investments, and command a high premium. Canada five per cents are also issued, but of course are not so readily saleable as those first named, but yet are a desirable investment in a country where the average value of money rules so low as in Britain.

2ND. MUNICIPAL LOAN FUND BONDS.

Issued by the Province of Canada, in Upper and Lower Canada, respectively. These also present a satisfactory security. The character of these bonds is fully described elsewhere under the title "Municipal Loan Fund." It may be added that these securities receive additional value, from the fact that the limit assigned to the issue has been already reached.

3RD. MUNICIPAL DEBENTURES OF UPPER CANADA.

These debentures are issued by our various municipalities, the nature of which institutions is elsewhere fully explained. The debentures of the Canadian cities, counties and townships, are issued under

the restriction of salutary safeguards. The various municipalities have power under the restrictions and upon the security mentioned in the acts creating them, to borrow money for the execution of city, county or township works within their jurisdictions. They may take stock in road companies or in railways, subject to similar provisions and restrictions. For the liquidation of such liabilities, they are authorized to issue debentures. The creation of such debt must be sanctioned by a by-law, which must fix the date, at which the same shall mature, and that within twenty years. A special rate per annum must also be imposed upon all the rateable property within the jurisdiction, such as shall be sufficient to defray the debt and interest within twenty years. The municipality cannot discontinue such rate, until the debt and interest are discharged. It is further expressly enacted, that until such debt is wholly paid, the by-law is in force, and any by-law repealing it is absolutely null and void. The municipality is bound to report to the Executive Government of the Province annually the state of its debt. Should the municipality neglect to provide for the debt or interest, the payment can be enforced, and on a writ of execution being addressed to the Sheriff, he has power to examine "the adjusted and settled assessment rolls" of such municipal corporation, and to strike a rate upon the same, for the collection of which he is authorised to issue a precept to the collector to levy and enforce the same. Such then is the mode in which these securities are issued and the way in which their liquidation is provided for.

PUBLIC DEBT.

The direct liability of the Province of Canada is £5,371,315 6s. 8d. currency, to which is to be added the collateral liability, as, for instance, the public guarantee lent, and to be lent, to railways, £2,166,640. The total debt, including the direct debt, the collateral debt, and debts, as the Municipal Loan Fund, to which the Province is only by implication responsible, as being payable out of a Special Fund, is estimated, by a Committee of the House of Assembly, at £9,650,506 9s. 5d., the total interest on which is £544,135 4s. 4d. per annum. And this indebtedness, it is to be borne in mind, is chiefly incurred for public improvements and works of general utility, contributing directly to the advancement of the Province, and the increase of its productive capabilities. The sanction of the Legislature is required to any expenditure of the public monies.

CHAPTER X.

CLIMATE.

This Treatise would be incomplete without some reference to this important topic, with regard to which there is much misconception. In the words of a writer on the subject: "Notwithstanding the enjoyment of a soil eminently fertile, and of a climate distinguished by remarkable salubrity, notwithstanding a decided superiority for agricultural purposes over the State of New York, the northern part of Ohio and Illinois, the States of Michigan, Iowa, Wisconsin, the "far West," and the whole of New England; in a word, over the wheat-growing States generally, yet the impression undoubtedly prevails among multitudes, who are desirous of emigrating from Great Britain and Ireland, that the climate of Western Canada is distinguished by the characteristics of intense and almost unendurable winter cold, together with a hot and fleeting summer, which scarcely affords the agriculturist time to secure his harvest. The European emigrant, who is still deterred from seeking a home in Western Canada, by traditionary details of the severity of the climate of the remote eastern part of the United Provinces, is ignorant of the fact that in preferring any part of the United States, to which allusion has been made, he is actually selecting for himself a climate of greater winter cold and summer heat, and not only more unhealthy, but also far more hazardous to the agriculturist than that which he obtains in the Canadian peninsula."

CANADA WEST.

From the peculiar position of the Province among the great lakes, whose influence in ameliorating the winters is very great, it presents adaptation to the purposes of agriculture which are not surpassed in any other portion of North America.

"The most important points in which the climate of Western Canada differs from that of the United States, and of those portions of Canada itself which lie north of the forty-first parallel of latitude," says the same writer already quoted, and of whose labours in this chapter use is made in giving an idea of the climate of Western Canada "may be briefly enumerated as follow:" *

1st. In mildness, as exhibted by comparatively high winter and low summer temperatures, and in the absence of great extremes of heat.

* "A comparative view of the climate of Western Canada," by Henry Youle Hinde, Esq., Toronto.

2nd. In adaptation to the growth of certain cereals and forage crops.

3rd. In the uniformity of the distribution of grain over the agricultural months.

4th. In the humidity of the atmosphere, which although considerably less than that of a truly maritime climate, is greater than that of localities situated at a distance from the lakes.

5th. In comparative immunity from spring frosts and summer droughts.

6th. In a very favorable distribution of clear and cloudy days, for the purposes of agriculture, and in the distribution of rain over many days.

7th. In its salubrity.

The points in which the climate of Western Canada differs favorably from that of Great Britain and Ireland are:

1. In its high summer mean of temperature.

2. In its comparative dryness.

3. In the serenity of the sky.

Yet in spite of these advantages, impressions to the contrary have been but too prevalent, and confounding Eastern with Western Canada, (the climate of the former being, though very salubrious, much more severe,) all Canada is often represented as a Siberia, and that too a representation of a country whose production of wheat is annually increasing at the average rate of two millions of bushels.

Subjoined, is a table of the mean maximum and mean minimum temperatures, together with the range of the different months of the year, as observed at Toronto, in Her Majesty's Observatory, being the mean of 11 years, viz: from 1840 to 1850 both inclusive:

	Mean.	Maximum.	Minimum.	Range.
January	24° 67′	45° 33′	4° 41′	49° 74′
February	24 14	46 35	4 37	50 72
March	30 83	53 31	7 59	45 92
April	42 17	71 44	17 96	53 48
May	51 84	76 76	28 82	47 94
June	61 42	76 44	35 72	40 72
July	66 54	88 11	44 05	44 06
August	65 76	83 98	45 02	38 95
September	57 11	80 19	32 07	48 12
October	44 50	66 10	22 17	44 30
November	36 57	57 03	13 33	43 60
December	27 18	45 25	3 52	46 27

Annual mean.....44° 39′.

From these figures we glean, says Mr. Hinde, the following facts:

1st. The hottest month in the year is July, the coldest February.

2nd. There are four months in the year during which the average temperature is less than the freezing point of water. These months are, January, February, March and December. These constitute the winter months.

3rd. There are three months, April, October and November, during which, the temperature is above the freezing point of water and below the mean temperature of the year.

4th. There are five months in the year, during which the mean temperature is above the annual mean. These are May, June July, August and September. These months, with October, constitute the agricultural or growing months of Western Canada.

MILDNESS OF THE CLIMATE OF THE CANADIAN PENINSULA.

The following table, shewing the difference between the mean summer and mean winter temperatures of various localities, is worthy of attention, as illustrating the mildness of the climate of Western Canada, when compared with the excessive climates of the Western States:

Difference between the summer and winter means of temperature.

Latitude.			
43°	39′	Toronto,	39° 00′
41	30	Muscatine, Iowa,	45 00
41	28	Fort Armstrong, Illinois,	49 05
43	03	Fort Crawford, Wisconsin,	50 89
41	45	Council Bluffs, Missouri,	51 34
44	53	Fort Snelling, Minnesota,	56 60

AS CONTRASTED WITH GREAT BRITAIN.

In nearly every part of England and Ireland, the mean annual temperature varies from two to five degrees *higher* than at Toronto, The mean summer temperature is four or five degrees *lower* than at the last mentioned place. Hence Indian corn will rarely ripen, or melons, squashes, or pumpkins grow to any size in the open air in the British Isles, though these vegetables attain remarkable dimensions in Western Canada. Peaches, plums, and grapes also ripen freely in the open air, and the first mentioned fruit, in the Niagara District, are grown in orchards. The mean summer temperature of 57° 2′ appears to be the minimum requisite for the cultivation of wheat. The mean summer temperature at Toronto

is 64° 51′, and if the mean of the whole Province were taken, it would probably be found to be 66°. The mean maximum summer temperature at Toronto is 85° 26′.

Table of the mean summer temperature at various localities in Europe compared with Toronto:

	Degrees.
Toronto, mean summer heat,	64.51
Berlin, (Europe,) " "	63. 2
Cherbourg, " "	61. 9
Penzance, " "	61. 8
Greenwich, " "	60.88
Cheltenham, " "	60.04
Toronto, mean temperature of the hottest months,	66.54
Paris, " " " " "	60.02
Frankfort on the Main, " " "	66.00
Berlin, " " " " "	64. 4
London, " " " " "	64. 1
Cherbourg, " " " "	63. 2

LOWER CANADA.

The climate of the Province, and of that portion of Upper Canada which lies to the north of the 44th parallel of latitude, is more severe than in the favored region of Canada above alluded to, lying south of that parallel. The prevailing winter wind in the Canadas is the north-west. In Peninsular Canada, as it may be styled, it sweeps over unfrozen lakes of vast extent and depth. In the other portions of Canada it traverses forest regions, and a frozen tract of country extending far towards the poles. Hence the production of greater winter cold and summer heat in the valleys of the St. Lawrence and Ottawa, than south of the 44th parallel.

Still, the climate of Lower Canada is eminently salubrious, and the thermometer is but a very imperfect guide to the enquirer accustomed to its ranges in the damp, humid atmosphere of sea-bound countries. The atmosphere in winter is dry, clear and bracing, and consequently consumption is less prevalent than in Britain or even the United States. The depth of snow is usually from eighteen inches to two feet, and its coming is looked for with eagerness, supplying as it does to the wayfarer and the agriculturist a natural railroad, which in a new country, where roads are at first imperfectly constructed, is of great benefit. Snow usually disappears finally in Lower Canada about the middle of April, and

appears about the beginning of December. In Western Canada, north of the 44th parallel of latitude, snow usually disappears three weeks sooner than in Lower Canada, while south of that parallel there is rarely sufficient snow to permit of over two of three days sleighing in winter. As the great lumber region lies north of the parallel, the snow is of great service in enabling the trees after being felled to be drawn out to the streams down which they are in spring to be floated. The snow also acts usefully on the soil, being a natural fertiliser, and hence Lower Canada, while before the visit of the Hessian fly scourge, now disappearing, it produced wheat largely, is especially adapted to the growth of root crops.

The heat of the climate has also been much exaggerated. I here give, for the various months, the monthly means of temperature at Montreal and Greenwich :

	Montreal.	Greenwich.
January	18.58	37.79
February	16.08	37·06
March	28.96	42.20
April	41.04	47.10
May	56.12	53.64
June	68.97	60.03
July	71.36	61.43
August	71.04	61.19
September	58.50	56.99
October	44.53	49.33
November	32.36	44.57
December	18.50	39.97

The mean temperature of the month of July at Montreal during four years was 71.36, while at Greenwich the mean of seven years was 61.43. The mean highest temperature at Montreal in July was 97.70, at Toronto 88.28, at Greenwich 85.37. The mean lowest temperature at Montreal in July was 53.25, at Toronto 42.86, and at Greenwich 45.80.

The prevailing winds of Canada are stated, by a writer on Canada, to be the south-west, the north-east and north-west. The south-west, which sweeps down the valley of the St. Lawrence, over the rivers and great lakes, for about two-thirds of the summer season, carries with it a portion of the warmth of the region of the Gulf of Mexico and the valley of the Mississippi. The north-east wind is damp and chilly. The north-west wind, which is most frequent in winter, is dry, cold and elastic. The most sudden changes of wind are to the north-west, followed by weather clear and cold for the season. The heaviest storms of rain and deepest falls of snow are usually accompanied by easterly

winds. The south-east wind is soft, thawy and rainy. The wind blows less frequently from the west and south, and still more seldom from due north.

The climate of Canada is favorable to health and longevity. In 1851 there were, in Lower Canada, over 100 years of age, 38 persons; between 90 and 100 years, 417; between 80 and 90, 3030; between 70 and 80, 11,084; between 60 and 70, 24,095.

In Upper Canada, in the same year, there were, over 100 years of age, 20 persons; between 70 and 80, 7156; between 60 and 70, 20,266; so that the balance is in favor of the Lower Province as regards the longevity of its inhabitants, and is doubtless to be referred to the greater comparative dryness of the atmosphere.

In Lower Canada, it may be further stated, that melons ripen freely in the open air; plums and pears grow abundantly, and apples attain a peculiar degree of excellence, the apples of the Island of Montreal being especially famed. Peaches and grapes also ripen freely with the aid only of glass. On the whole it may be safely asserted that while the Province presents great diversities of climate, yet the general character of its climate is such as to conduce both to the maintenance of the physical health of the inhabitants of the Province, and also to the promotion of the growth of the cereal and other natural products of the fertile soil of Canada.

And now, in conclusion, the writer, on reviewing the motives which have animated him in this effort, and on looking back to the hours during which, in the intervals of release from his ordinary engagements, he has prepared the statements of this Treatise, is persuaded that he cannot better take leave of his readers than by assuring them that the assertions contained in the foregoing pages have not been rashly ventured, but have been deliberately penned in the spirit of that patriotism which should lead every Canadian to appreciate the sentiments contained in, and to echo the following words of another writer whose work has been elsewhere already quoted from, namely, that "it is equally a matter of individual and national importance that every earnest well-wisher of Canada should contribute his mite to elevate the industry of the country, and extend the knowledge of her capabilities to the tens of thousands across the seas, who would willingly and even joyfully make this fertile British Province their home, had they confidence in its climate, its soil, its great resources," and I add, in its political liberty, its educational advantages and religious privileges, and in the greatness of that future to which this noble Province it surely and steadily rising.

APPENDIX.

TABLE extracted from the Report on Emigration, published by the House of Assembly.

1854.

ROUTES, DISTANCES, AND RATES OF PASSAGE.

FROM QUEBEC TO MONTREAL.—180 miles, by steamers, every day, at five o'clock; through in 14 hours.

	Steerage.		Cabin.	
By the Royal Mail Packets	3s. Stg.	3s. 9d. Cy.	14s. Stg.	17s. 6d. Cy.
By Tait's Line	3s. "	3s. 9d. "	10s. "	12s. 6d. "

FROM MONTREAL TO WESTERN CANADA.—Daily by the Royal Mail Line Steamer, at 9 o'clock A. M., or by Railroad to Lachine, at 12 o'clock.

From Montreal to—

	Distances.		Deck Fare.		Cabin Fare.	
Cornwall	78 Miles.		5s. Stg.	6s. 3d. Cy.	11s. Stg.	13s. 9d. Cy.
Prescott	127	"	6s. "	7s. 6d. "	14s. "	17s. 6d. "
Brockville	139					
Kingston	189	"	8s. "	10s. 0d. "	20s. "	25s. 0d. "
Cobourg	292	"	12s. "	15s. 0d. "	28s. "	35s. 0d. "
Port Hope	298					
Bond Head	313	"	14s. "	17s. 6d. "	34s. "	42s. 6d. "
Darlington	317					
Whitby	337					
Toronto	367	"	16s. "	20s. 0d. "	36s. "	45s. 0d. "
Hamilton	410					
Detroit	596	"	24s. "	30s. 0d. "	56s. "	$14
Chicago	874	"	32s. "	40s. 0d. "	80s. "	$20

Passengers by this line tranship at Kingston to the Lake Steamers, and at Toronto for Buffalo.

Daily by the American Line Steamer, at 1 o'clock A. M.

From Montreal to—

	Distances.		Deck Fare.		Cabin Fare.	
Ogdensburg	138 Miles.		6s. Stg.	7s. 6d. Cy.	14s. Stg.	17s. 6d. Cy
Cape Vincent	190	"	8s. "	10s. 0d. "	20s. "	25s. 0d. "
Sacket's Harbour	242	"	12s. "	15s. 0d. "	24s. "	30s. 0d. "
Oswego	286	"	14s. "	17s. 6d. "	26s. "	32s. 6d. "
Rochester	349	"	16s. "	20s. 0d. "	30s. "	37s. 6d. "
Lewiston	436				34s. "	42s. 6d. "
Buffalo	467	"	20s. "	25s. 0d. "	38s. "	47s. 6d. "
Cleveland	661	"	26s. "	32s. 6d. "	...	...
Sandusky	721	"	28s. "	35s. 0d. "	...	...
Toledo and Monroe	975	"	28s. "	35s. 0d. "	...	...

Passengers by this line tranship at Ogdensburg to the Lake Steamers for Oswego and Lewiston.

The Passengers for both lines embark at the Canal Basin, Montreal.

Steerage Passage from Quebec to Hamilton.....23s. 9d.

" " " " Buffalo.....28s. 9d.

FROM HAMILTON TO THE WESTERN STATES, BY THE GREAT WESTERN RAILROAD.—THE NEW SHORT ROUTE TO THE WEST.—Trains leave Hamilton daily for Detroit, connecting at that City with the Michigan Central Railroad for Chicago.

	Distances.	Emigrant Train.		First Class Train.	
To Dundas	6 Miles.	0s. 6d. Stg.	0s. 7½d Cy.	1s. 0d. Stg.	1s. 3d. Cy.
Flamboro'	9 "	" "	" "	" "	" "
Paris	20 "	2s. 0d. "	2s. 6d. "	3s. 8d. "	4s. 6d. "
Woodstock	48 "	3s. 0d. "	3s. 9d. "	5s. 0d. "	6s. 3d. "
Ingersol	47 "	3s. 6d. "	4s. 4½d. "	7s. 0d. "	8s. 9d. "
London	76 "	4s. 9d. "	6s. 0d. "	9s. 0d. "	13s. 3d. "
Eckford	96 "	6s. 0d. "	7s. 6d. "	14s. 0d. "	17s. 6d. "
Chatham	140 "	7s. 0d. "	8s. 9d. "	" "	" "
Windsor, Detroit, Michigan	186 "	8s. 0d. "	10s. 0d. "	20s. 0d. "	25s. 0d. "
Chicago, Illinois	465 "	16s. 0d. "	20s. 0d. "	44s. 0d. "	55s. 0d. "

Steamers leave Chicago daily for Milwaukie and all other Ports on Lake Michigan.

Emigrants, on arriving at Chicago, if proceeding further, will, on application to Mr. H. J. Spalding, Agent of the Michigan Central Railroad Company, receive correct advice and direction as to route.

Passengers for the western parts of the United States of New York, Ohio, Pennsylvania, and Indiana, must take the route viâ Buffalo.

OTTAWA RIVER AND RIDEAU CANAL.—From Montreal to Bytown and places on the Rideau Canal, by steam every evening, by Robertson, Jones & Co.'s Line.

		Distances.		Deck Passengers.	
From Montreal to	Carillon	54	Miles.	2s. Stg.	2s. 6d. Cy.
" "	Grenville,	66	"	3s. "	3s. 9d. "
" "	L'Orignal,	73	"	3s. "	3s. 9d. "
" "	Bytown,	129	"	4s. "	5s. 0d. "
" "	Kemptville, (Rideau Canal)	157			
" "	Merrickville, (Rideau Canal)	175			
" "	Smith's Falls, (Rideau Canal)	100			
" "	Oliver's Ferry, (Rideau Canal)	199	"	6s. "	7s. 6d. "
" "	Isthmus, (Rideau Canal)	216			
" "	Jones' Falls, (Rideau Canal)	226			
" "	Kingston, (Rideau Canal)	258			

Passengers proceeding to Perth, Lanark, or any of the adjoining settlements should land at Oliver's Ferry, 7 miles from Perth.

ROUTE TO THE EASTERN PARTS OF THE UNITED STATES.

Emigrants proceeding to any of the following States of the American Union, viz:—Maine, New Hampshire, Massachusetts, Connecticut, Vermont, New York and Pennsylvania,—By the Champlain and St. Lawrence Railroad Company,—Mr. W. A. Merry, Secy.; Office opposite the Steamboat Landing, Montreal.

		Emigrant Train.	
From Montreal to	Burlington	8s. 0d. Stg.	10s. 0d. Cy.
" "	Whitehall	12s. 0d. "	15s. 0d. "
" "	Troy	18s. 0d. "	22s. 6d. "
" "	New York,	19s. 0d. "	23s. 9d. "
" "	Boston	26s. 0d. "	32s. 6d. "

Trains of the above Company leave Montreal daily.

From Toronto, Steamers leave daily for Port Credit, 15 miles; Oakville, 25 miles; Wellington Square, 37 miles; Hamilton, 43 miles; also Port Dalhousie on the entrance of the Welland Canal, Niagara, Queenston and Lewiston.—Passage, 3s. 9d.

Steamers leave Kingston daily for the Bay of Quinté and the River Trent, calling at Picton, Adolphustown, Belleville, and other landing places in the Bay.

TO NEW BRUNSWICK.

The best and most expeditious route is by the St. Lawrence and Atlantic Railroad, from Montreal to Portland—thence by Steamer, which leaves for St. John's, N. B., every Monday and Wednesday evening at 8 o'clock.

From Quebec to Montreal, by Steamer,.....	3s. Stg.	3s. 9d. Cy.
Montreal to Portland, by Railroad,.....	21s. "	30s. 0d. "
Portland to St. John's, by Steamer,.....	16s. "	20s. 0d. "
	43s. "	53s 9d. "

Freight Steamers leave Montreal daily for Kingston, Toronto and Hamilton.

Passage to Kingston,.....	4s. Stg.	5s. Cy.
" Toronto and Hamilton,.....	8s. "	10s. "

Throughout these passages, Children under 12 years of age are charged half-price, and those under 3 years are free.

Passengers by Steamers from Quebec to Hamilton—Luggage free; if by Railroad, 100 lbs. is allowed to each passenger; all over that quantity will be charged.

The Gold Sovereign is at present worth 24s. 4d. Cy.; the English Shilling, 1s. 3d.; and the English Crown-piece, 6s. 1d.

Through-tickets can be obtained on application to this office.

A. C. BUCHANAN.
Chief Agent.

Emigration Department,
Quebec, August, 1854.

CLASSIFICATION OF MINERAL SUBSTANCES SENT FROM CANADA TO THE PARIS EXHIBITION, IN THE ORDER IN WHICH THEY ARE EMPLOYED IN THE ARTS.

1. *Metals and their ores.*

Magnetic Iron, from Marmora, Madoc, Sherbrooke, Crosby, Hull, Leeds and Portage du Fort.
Specular Iron, from McNab, Wallace and Lake Nipissing.
Bog Iron, from Houghton, Vaudreuil, Nicolas, Machiche, Pointe du Lac, St. Pierre, Cap de la Madeleine and Saint Valier.
Titaniferous Iron, from Sutton and Brome.
Ilmenite, from Bay St. Paul and Saint Urbain.
Blende, from Lake Superior.
Galena, from Lake Superior, Gaspé, Ramsay and Lansdowne.
Copper Ore, from Lake Superior, Lake Huron and Inverness.
Native Copper, from Lake Superior.
Auro-Argentiferous and Argentiferous Pyrites, from the Eastern Townships.
Nickel, from Lakes Huron, Superior and Daillebout.
Silver, Native, from Lake Superior.
Gold, Native, from Rivière du Loup, Fief St. Charles, Aubert de l'Isle, Etchemin, River Chaudière, River Famine, and other neighbouring places.
Platinum, from Fief St. Charles.
Iridosmine, from Fief St. Charles.
Auriferous Pyrites, from La Beauce.
Argentiferous Pyrites, from La Beauce.
Arsenical Pyrites, from La Beauce.

2. *Minerals requiring chemical operations to fit them for use.*

Uran Ochre, from Madoc.
Chromic Iron, from Bolton and Ham.
Cobalt, from Lake Superior.
Wad, or Earthy Manganese, from Quebec.
Iron Pyrites, from Lanoraie, Dautraye, and the Eastern Townships.
Molybdenite, from Lake Superior and Somerville.
Dolomite, from Dalhousie, Blythfield, Sutton, Brome, Shipton, St. Sylvestre and Point Levy.
Magnesite, from Sutton and Bolton.

3. *Mineral Paints.*

Iron Ochre, from St. Anne near Quebec, Cap de la Madeleine, Shipton, and Pointe du Lac and Rimouski.
Barytes, from Burgess and Lansdowne.
Phosphate of Iron, from Vaudreuil.

4. *Materials applicable to the Fine Arts.*

Lithographic Stone, from Marmora.

5. *Materials applicable to Jewellry.*

Agates, from Lake Superior and the North Shore.
Labradorite, from Grenville.
Jasper, from Lake Huron.
Ribboned Chert, from Lake Superior.
Perthite, from Bathurst.
Ruby, from Burgess.

6. *Refractory Materials*

Soapstone (compact talc,) from Bolton and Potton.
Mica, from Grenville.
Plumbago, from Grenville and Burgess.
White Sandstone, from St. Maurice.
Asbestus, from Dalhousie and Kamouraska.

7. *Mineral Manures.*

Phosphate of Lime, from Perth.
Gypsum, from Brantford and Oneida.
Shell Marl, from Ottawa, Sheffield, Montreal and Stanstead.

8. *Grinding and Polishing Materials.*

Whetstones, from Madoc, Eastern Townships.
Canadian Tripoli, from Laval.

9. *Materials employed in the construction of buildings.*

Slates, from the Eastern Townships.
White Granite, from Hereford, Barnston, St. Joseph and Nicolet.
Pseudo-granite, from Nicolet and Lorette.
Sandstone, from Ramsay, Pembroke and St. Maurice.
Calcareous Sandstone, from Lauzon and Chaudière.
Limestone, from Marmora, McNab, The Chats, Gloucester, Montreal, Packenham and Caughnawaga.
Trap, from St. Rochs.
Marble, from Oxford, Lake Brompton, Dudswell, Saint Armand, Saint Lin, McNab and Packenham.
Hydraulic Limestone, from Thorold, Quebec, Oneida, Nepean and Brantford.
Building Bricks, from divers places.

10. *Combustible Materials.*

Peat, from Longueuil and Sheffield.
Asphalt, from Enniskillen.

11. *Miscellaneous Minerals.*

Aërolite, found at Madoc, forming a mass of iron with 6·35 per cent. of Nickel, weighing 370 lbs.

Canada is indebted to its experienced geologist, Mr. Logan, for the greater part of this collection of our minerals. The names of the localities mentioned in the above list only shew the places which have furnished the specimens exhibited; but it must not be inferred from this, that these places only, furnish those materials. The greater part of these mineral substances are abundantly distributed over the whole surface of the country.

CLASSIFICATION OF THE DIFFERENT VARIETIES OF CANADIAN WOODS, SPECIMENS WHEREOF FORM THE CANADIAN COLLECTION FOR THE PARIS EXHIBITION.

1. *Magnoliaceæ.*

White-wood, so called in this country. (Liriodendron tulipifera. Linn.)

2. *Tiliaceæ.*

Bass-wood. (Tilia Americana. Linnée.)

3. *Anacardiaceæ.*

Sumac. (Rhus typhina, Linnéc.)

4. *Aceraceæ.*

Sugar Maple. (Acer saccharinum, Linnéc.)
Rock Maple, " "
Curled Maple, " "
Birds-eye Maple, " "
Soft Maple. (Acer dasycarpum. Ehrhart.)

5. *Amygdaleæ.*

Wild Yellow Plum. (Prunus Americana. Marshall.)
Red Cherry. (Cerasus Pennsylvanica. Loisel.)
Black Cherry. (Cerasus serotina. De Candolle.)
Choke Cherry. (Cerasus Virginiana. De Candolle.)

6. *Cornaceæ.*

Cornel, flowering dogwood. (Cornus florida. Linnée.)

7. *Pomaceæ.*

Dotted or Apple Thorn. (Cratægus punctata. Jacquin.)
Red Thorn. (Cratægus coccinea. Linnée.)
White Thorn. (Cratægus crus Galli. Linnée.)
Mountain Ash. (Pyrus Americana. De Candolle.)
June or Service berry. (Amelanchier Canadensis. Torrey and Gray.)

8. *Fraxineæ.*

White Ash. (Fraxinus Americana. Linn.)
Black Ash. (Fraxinus Sambucifolia. Lambert.)
Rock Ash. (Fraxinus Pubescens. Walter.)
Rim Ash. (Fraxinus Juglandifolia. Lambert.)

9. *Lauraceæ.*

Sassafras. (Sassafras Officinale. Von Esenbeck.)

10. *Ulmaceæ.*

White Elm. (Ulmus Americana. Linn.)
Red or Slippery Elm. (Ulmus Fulva. Michaux.)
Rock Elm. (Ulmus Racemosa. Thomas.)
Gray Elm. (" ")

11. *Juglandaceæ.*

Butternut. (Juglans Cinerea. Linn.)
Black Walnut. (Juglans Nigra. Linn.)
Soft Walnut.
Shell Bark Hickory. (Carya Alba. Nuttal.)
Smooth Bark Hickory. (" Tormentosa. Nuttal.)
Pignut. (" Glabra Torney.)
Bitternut. (" Amara. Nuttal.)

12. *Cupuliferæ.*

White Oak. (Quercus Alba. Linn.)
Swamp White Oak. (" Bicolor. Willd.)
Red Oak. (" Rubra. Linn.)
Black Oak. (" Nigra. Linn.)
Chesnut. (Castanea Vesca. Linn.)
White Beech. (Fagus Ferruginea. Aiton.)
Blue Beech, Horn-Beam. (Carpinus Americana. Michaux.)
Iron Wood. (Ostrya Virginica. Willd.)

13. *Betulaceæ.*

Paper or Canoe Birch. (Betula Papyracea. Aiton.)
Yellow Birch. (" Excelsa. Aiton.)
Cherry Birch. (" Lenta. Linn.)
Black Birch. (" Nigra. Linn.)
Alder. (Alnus Incarna. Willd.)

14. *Salicaceæ.*

Black Willow. (Salix Nigra. Marshall.)
Aspen Poplar. (Populus Tremuloïdes. Michaux.)
Large-toothed Aspen. (" Grandidentata. Michaux.)
Balm of Gilead. (" Balsamifera. Linn.)
Cotton-wood, Necklace Poplar. (Populus Monilifera. Aiton.)

15. *Plantanaceæ.*

Button-wood, American Sycamore. (Plantanus Occidentalis. Linn.)

16. *Conifereæ.*

Pitch Pine. (Pinus Rigida. Miller.)
Red Pine. (" Resinosa. Aiton.)
Yellow Pine. (" Mitis. Michaux.)
White or Weymouth Pine. (Pinus Strobus. Linn.)
Balsam Fir. (Abies Balsamea. Marshall.)
Hemlock Spruce. (" Canadensis. Michaux.)
White Spruce. (" Alba. Michaux.)
Black Spruce. (" Nigra. Poiret.)
American Larch, Tamarack. (Larix Americana. Michaux.)
White Cedar. (Thuya Occidentalis. Linn.)
Red Cedar, Savin. (Juniperus Virginiana. Linn.)

These woods are found in abundance in all our forests, with very few exceptions; they are, with respect to the soil proper to each, subject to the same conditions as in other countries. The only remark of a general nature which we may here make is, that the families of *juglandaceæ* and *cupuliferæ* are more particularly the produce of the western section of the Province, while those of the *conifereæ* and *aceraceæ* are more particularly that of the eastern section.

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